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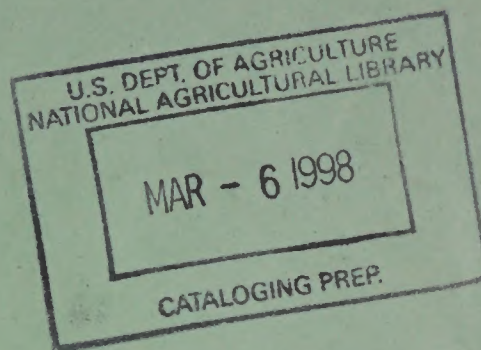
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UNITED STATES DEPARTMENT OF AGRICULTURE



THE DEPARTMENT OF AGRICULTURE

and the

MISSOURI RIVER BASIN

Prepared for the Use of the
Missouri Basin Inter-Agency Committee

April 1946

**United States
Department of
Agriculture**



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TABLE OF CONTENTS

	Page
THE DEPARTMENT OF AGRICULTURE AND THE MISSOURI RIVER BASIN. . .	1
AGRICULTURAL OBJECTIVES AND PROBLEMS IN THE DEVELOPMENT OF THE BASIN	4
SUMMARIES OF ACTIVITIES OF PRINCIPAL DEPARTMENT PROGRAMS. . . .	12
Agricultural Research Administration	12
Bureau of Agricultural Economics	19
Extension Work in the Missouri River Basin	27
Soil Conservation Service.	46
Rural Electrification Administration	56
Farm Credit Administration	59
Farm Security Administration	70
Production and Marketing Administration -- Field Service Branch	81
Forest Service	88

THE DEPARTMENT OF AGRICULTURE
AND THE
MISSOURI RIVER BASIN

This document has been prepared for the use of the Missouri Basin Inter-Agency Committee. It is primarily a summary of the interests and activities of Department programs affecting resource use and development in the Missouri River Basin. The document includes also a statement of what appear to be the more significant agricultural objectives and problems that need to be reached or solved as part of the comprehensive development of the Basin, not only in relation to the estimated 50,000 farms to be directly reached by the projected irrigation developments, but also in relation to the many millions of acres and half-million other farms and ranches in the Basin which these developments will reach less directly, some only remotely. It is hoped that the following information, although general in nature, will be helpful to the Committee in its important assignment of facilitating the coordinated development of the Basin.

The Department of Agriculture has of course long been vitally concerned with rural life and welfare within the Missouri River Basin. From the extreme headwaters of the Missouri along the Continental Divide in Montana to the River's mouth near St. Louis and along all of the tributary "little waters," one or more agencies of the Department now has its services available to the citizen.

From the days of settlement when farms and homes were being created out of virgin prairies, the Department has been steadily working for the stability and full development of Basin agriculture. From a beginning limited to advice on tilling and cropping and suggestions for meeting

insect pests and the hazards of drought and storm, the agricultural services now embrace a wide field. Through the cooperative research and extension programs with each State, new knowledge and great technological advancements are currently available to all and are being used on most of the more than half-million farms and ranches within the Basin. Beginning with forest fire protection, erosion control and waterflow retardation in the rough upper watershed lands of the River, and ending with detailed technical services for the downstream agricultural lands, the Department with its cooperating State and local agencies provides its services to all. In addition to the care given to the basic soil resource itself, the Department through its facilities for research, education, credit, financial and marketing assistance and other means has promoted better homes, greater security and more comfortable living for Basin farmers and their families.

The history of the Basin and the history of the Department run concurrently and together represent the development of the major breadbasket of America.

These activities carried on through the years by the Department and cooperating State and local agencies, county and community committees, and individual farmers and ranchers have made a substantial contribution to the present development of the Basin. The accumulated results provide an essential foundation for the further, more intensified development now envisaged, and an established, experienced organization is available to make its contribution to the important agricultural phases of the contemplated development of the Basin as a whole.

Currently, agricultural production goals have been staked out for 1946 and long-range estimates are being formulated covering foreseeable adjustments in production, processing, marketing and financing which confront agriculture as wartime requirements converge into peacetime demands. Attention is being focused on the development and application of new technologies deferred or retarded during the war years. Renewed emphasis is being placed on the conservation of agricultural and forest land resources from the standpoint of both the individual owner and operator and the general public. Special attention is being placed on the improvement of farm life, including rural housing, rural electrification, rural health, education, and the other things that will help to make farm life more complete and more attractive.

The interrelationships of agriculture and business, the dependence of agriculture upon full industrial employment, the international aspects of agriculture and the necessity for international collaboration, are now significant factors fully recognized by the Department in its reconversion, adjustment and development efforts.

All of these things indicate a greater responsibility resting upon the Department than at any time in the past, and likewise greater and wider opportunities for furthering American agriculture.

The current programs of the Department within the Basin contemplate not only vigorous continuation of those service, credit, research and educational activities that have by experience been found valuable, but their improvement and enlargement, as conditions permit, to meet more fully new needs and problems.

AGRICULTURAL OBJECTIVES AND PROBLEMS IN THE DEVELOPMENT OF THE BASIN

The development of any area depends upon a satisfactory relationship between agriculture, industry, business, and labor. Since agriculture is the dominant activity in the Missouri Valley, the entire economy in that Basin hinges largely upon the maximum conservation and wise utilization of the two basic natural resources -- soil and water.

The fundamental philosophy governing wise use is that land must be developed for and dedicated to that use or combination of uses which will result in the greatest permanent good to the greatest number of people. In respect to water, this requires that all water is to be devoted as far as possible to human service, with its possibilities for harm and destruction curbed.

The Congress has delegated to the Department of Agriculture many important functions which are fundamental in carrying out this philosophy. Under existing legislation the Department, in cooperation with State and local organizations, is charged with basic responsibilities for sound land use programs; water use, control and disposal; prevention of soil loss; forest resources management; farm family welfare and location; rural electrification; land ownership adjustments; farm financing; education in the field of agriculture, including rural health and welfare; and research affecting all phases of agricultural industry.

In the development of the Missouri River Basin the Department is aware of the legislative authorities of other agencies in flood control, navigation, power production, irrigation and related fields. The

relationship of farm families to soil and water use is, however, so close and so incapable of separation that programs affecting one affect all, and the Department of Agriculture must fully share in the responsibility of determining the use, development and control of the water resources within the Basin.

The size of the agricultural job is a huge one, for the extent of change in the agricultural structure within the Missouri River Basin occasioned by the proposed construction projects will be greater than any which has occurred in any other part of the United States. According to the present proposal, 50,000 farms would be reached by the new irrigation developments. In addition, it is hoped that these irrigated areas can be a stabilizing influence for an appreciable number of the farms and ranches which lie outside the irrigated areas themselves. In comparing the agricultural aspects with other irrigation areas, we find that one-fourth as much land is being proposed for irrigation and development as is now being irrigated in the entire United States.

Development of the Missouri Basin should be considered primarily in terms of successful farms and ranches. The objective should be a steady income that will result in better living -- first, for the people immediately concerned and, second, for the Basin as a whole.

Irrigation should be developed to supplement to the greatest possible extent the use of the range and dry land resources. About two-thirds of the land proposed for irrigation development is located in areas where from 50 to almost 100 per cent of the land area is now in cultivation and is privately owned. These areas are in the eastern

one-fourth of the region -- the subhumid climatic zone. Production is highly variable. In some years rainfall is ample to produce bumper crops, while in other years crops are nearly a complete failure. Because of this variation in the annual need for irrigation water, some modification of the usual irrigation distribution system and schedules of water delivery will be necessary. And this, in turn, will call for modifications in organization and repayment arrangements.

Many problems will be encountered in shifting from dry land farming to irrigation. Development of irrigation will make it necessary to modify farm organization, crop rotations, and frequently ownership and tenure arrangements. New machinery and equipment will be needed, and new technical knowledge and practices will have to be learned.

There is a lack of irrigation experience in this type of area, and much experimentation will need to be done before the most efficient methods are developed. It can be anticipated that without a comprehensive program of research and technical service, the irrigation development will be retarded.

Flood control should be developed to protect agricultural production in areas susceptible to floods. Cheap electric power can facilitate and add to the value of agricultural production. Cheap electric power is also an incentive to industrial development and to the use of the mineral resources of the region.

Balanced development of the water resources will result in benefits to other segments of the economy that are probably greater than the benefits to farmers -- for example, the transportation, processing,

trade and service enterprises. Looked upon in terms of a balanced economy, farmers in the areas to be irrigated should not be required to carry more than their reasonable share of the cost of such development. Their fair share can be determined by local studies designed to balance the proposed costs of irrigation construction and maintenance against the increased income prospects. Other segments of the economy that benefit from water development should also bear their fair share of the cost.

As well as providing authorities for other agencies, the Flood Control Act of 1944 reaffirmed those provisions of the 1936 and subsequent Flood Control Acts which specifically placed upon the Department of Agriculture the responsibility for Federal investigations of watersheds and measures for run-off and waterflow retardation and soil erosion prevention on watersheds. The Act also provides that: "Preference in the sale of power and energy shall be given to public bodies and cooperatives." The extension of area coverage of electricity to unserved farmers and country people in the Missouri River Basin through cooperatives and public bodies is a function of the Department.

The Department will undertake to expand operational responsibilities provided in Public Law 534 and other authorities. It will also undertake to speed up its investigational planning activities, commensurate with the Basin-wide scope and tempo of the job. There is immediate need for intensified activity in connection with the authorities provided for the Department to furnish technical and

financial assistance throughout the Basin in such matters as sound land use, soil and water conservation, water efficiency measures, economic analyses, credit needs, farm organization and housing needs, and public facilities analyses.

Preliminary information now available shows that many serious agricultural problems exist and will undoubtedly become more critical as the Missouri Basin program is developed. Examples of these problems are:

1. Land misuse leading to excessive run-off, erosion, siltation of lands, streams, and reservoirs, poorly drained areas, and other hazards.
2. Lack of adjustment of farm enterprises to land capability and other natural environmental factors.
3. Economic maladjustment such as in tenure, size of units, adjustment of production to demand, and problems of farm finance.
4. Displacement of farm families by reservoir and other construction; the use to be made of lands in reservoir sites subject to intermittent inundation; and readjustments in local public services and tax revenues occasioned thereby.
5. Inadequate knowledge of the long-range effects of many types of land use and the steps ultimately needed to keep the Basin economy on an even keel.
6. Unfulfilled rural welfare needs such as adequate health facilities and services, recreational facilities, adequate home economics, school and transportation facilities.

7. Need for increasing still further the timely dissemination of information to rural people on individual, community and Basin-wide problems and their solution.

In attaining the solution of these problems, it is the objective of the Department, in cooperation with appropriate State, Federal and local agencies, to:

1. Ascertain the best use of the lands within the Basin in line with the highest economic production and conservation, and the form of ownership and tenure consistent with such use.
2. Ascertain lands that are physically and economically suitable for development and improvement through irrigation or drainage.
3. Determine what needs to be done to various types of land in order for them to be used safely and profitably for intensive or extensive enterprises.
4. Assist in developing, adjusting, and protecting these lands for their proper use by soil, cover and water conservation, clearing, drainage, irrigation distribution systems, leveling and other improvements.
5. Furnish the necessary technical guidance to land owners and operators on efficient and protective practices, duty of water, crop rotations, maintenance and improvement of fertility, salinity control and other practices.
6. Provide additional leadership and aid in programs of rural housing, transportation, electrification, health, education, recreation and general community betterment.

7. Adjust existing programs and where needed develop new programs for proper land use in areas of settlement and furnish necessary technical guidance and financial assistance to assure their completion.
8. Assist local organizations that will guide or direct settlement and land use patterns that will promote stable and prosperous communities.
9. Aid in the constructing and financing of water development systems to irrigation farmers outside of Federal irrigation projects.
10. Determine the values and charges that agricultural land can carry in connection with the financing of irrigation and other Basin programs.
11. Aid in handling problems of farm family displacement, of use of intermittently inundated reservoir sites, and of local governmental readjustments occasioned thereby.
12. Conduct additional and continued research to supply as rapidly as possible the facts that will serve as a basis for determining the best use and conservation of land resources and for the development and preservation of sound economic and social patterns in the Missouri River Basin.
13. Develop more comprehensive and effective means of disseminating information regarding the physical, economic, and human problems of the Basin and their indicated solutions.

To carry out the program and meet the needs listed above, it is recognized that primary emphasis will be placed in areas designated for immediate construction, and that a speeding up of the activities

of the Department is called for to keep abreast of this construction at all times. However, the Department of Agriculture also has the responsibility for aiding the agricultural economy of the entire Basin for the greatest good of the Nation and must at all times keep this over-all objective in mind.

Following are brief summaries of the functions and activities of the principal Department programs affecting resource use and development in the Missouri River Basin at this time.

SUMMARIES OF ACTIVITIES
OF PRINCIPAL DEPARTMENT PROGRAMS

Agricultural Research Administration

The Agricultural Research Administration is charged with making investigations on many important problems affecting the maximum beneficial use of the Missouri Valley and its resources. Research is conducted on the potentialities and management of soils; the suitability of crops and cropping systems; the development of improved crop varieties; the control of diseases and insects affecting crops and livestock; improvement in farm and irrigation practices, including control of salinity; improvements in animal breeding, feeding, and other production techniques; development of more adequate crop storage facilities to carry feed supplies through drought years; improvements in other farm structures; development of better tillage implements and tillage practices; improvements in harvesting machinery and other farm equipment; the fuller use of electricity on the farm; more efficient utilization of farm products and the development of new uses for them. As an integral part of its research program, it is charged with the classification and mapping of the soils of the Basin as part of the Nationwide cooperative soil survey, in terms which permit the soils on any farm to be compared directly with those on any other farm and with those on experiment fields and so helps tell where research results have application. This Administration also conducts programs for the control of insect pests and plant and animal diseases.

Most of the research activities of the Agricultural Research Administration are carried on in cooperation with the State agricultural experiment stations; insect and disease control operations in cooperation with appropriate State agencies.

The following are examples of activities of the Agricultural Research Administration that have brought large benefits to the farmers and people of the Missouri Valley:

Plant breeding programs, cooperative with the State agricultural experiment stations, have resulted in:

- (1) Adoption of rust-resistant high-quality varieties of hard red spring wheat which were estimated to have produced at least 100,000,000 bushels more grain in 1944 than would have been produced if the old susceptible varieties had been grown.
- (2) Development of oat varieties, resistant to rust and smut, more resistant to lodging, having higher test weight, and yielding 20 per cent more than the older varieties. In 1943 these new varieties were grown on about two-thirds of the oat acreage.
- (3) Hybrid corn, yielding about 20 per cent more grain than the old open-pollinated varieties and suitable for mechanical harvesting, adopted on more than three-fourths of the corn acreage.
- (4) Introduction of crested wheatgrass for reseeding abandoned grain fields and for improving pastures and ranges in the Northern Great Plains, where it has outyielded bromegrass and native wheatgrass as a hay crop. By 1944, it had been established on 3,000,000 acres of abandoned grain fields alone, and a seed crop of 25,000,000 pounds, enough to seed 2,500,000 acres, was harvested in the area.

- (5) Development of Lincoln bromegrass, an aggressive strain with high seedling vigor and high yields, particularly valuable for hay and pasture and for seeding grassed waterways in the central and southern parts of the Basin. Approximately 300,000 pounds of certified Lincoln bromegrass were produced in Nebraska in 1945.
- (6) Production of Ranger, a wilt-resistant alfalfa. Bacterial wilt threatened thousands of acres of alfalfa in the Missouri Valley, wherever there was enough moisture for good growth of the crop. In tests Ranger has maintained good stands after four or five years under conditions where the older varieties died in two or three years. It is now being grown in many States, and seed production is being increased for further expansion of the variety.

Experiments in western Nebraska have shown the advantage of planting sugar beets two or three weeks earlier than had previously been thought safe. The earlier planting results in a more even stand because of winter moisture stored in the soil, and this may result in a gain of two or more tons per acre in yield, enough to offset the risk of having to replant due to frost injury. As a result, sugar beet plantings in the Northern Great Plains have been set forward about two weeks.

Research at field stations in the Great Plains has shown that under dry-farming conditions in most areas rotation of wheat with summer fallow gives higher yields than either continuous wheat or rotations

of wheat with other crops. This has undoubtedly contributed to the widespread adoption of the summer-fallow system in this region.

Maximum production experiments conducted on irrigated land at the U. S. Field Station at Huntley, Montana, demonstrate the possibility of increases up to 100 per cent in crop yields over ordinary practices where the combination of rotations, fertilization, tillage, and other practices considered best suited to the region was used. While a similar increase may not be attainable everywhere under farm conditions, the experiment indicates ways in which irrigation farmers can increase production.

Grasshoppers constitute one of the most destructive pests to farm crops in the Missouri Basin. Control methods developed and applied by the Bureau of Entomology and Plant Quarantine, in cooperation with State and local agencies, are effective in averting enormous losses from these insects. Similarly, effective measures have been developed for control of Mormon crickets, occasionally destructive in the Northern Great Plains. The maintenance of an organization that is vigilant in detecting and eradicating these pests while outbreaks are in incipient stages is an essential feature of these control measures.

Research by entomologists of the Department of Agriculture and cooperating State experiment stations has made it possible to prevent major losses to wheat from the Hessian fly by moderately late planting of the crop. This practice has now been widely adopted in the winter wheat region of the Missouri Basin, greatly reducing former losses, which were estimated in Kansas at about 15 per cent of crop.

Research on the control of insects in stored grain on farms and in elevators and flour mills has made it possible to save millions of dollars annually in this region by averting such losses.

Breeding investigations with dairy cattle have shown that the surest and quickest way to increase milk-producing capacity of a herd is by selection and use of the right kind of progeny-tested bulls at all times. This system of so-called proved-sire breeding is rapidly being adopted by progressive dairy farmers in the Missouri Basin, the same as elsewhere.

Experimental dairy herds at field stations (including Huntley, Montana) are being developed for high-production ability through continuous use of proved sires and constitute a reservoir of "superior germ plasm" used to improve farm herds near the stations. Outstanding bulls from station herds are loaned to cooperative bull associations and artificial breeding organizations, where their superior breeding value is being spread over a large number of farm herds.

Research in the breeding and feeding of beef cattle and their protection against disease, parasites, and poisonous plants, extending over 14 years, has helped stockmen to improve their cattle and their ranges, making beef production more stable and profitable.

Research on livestock parasites has shown the effectiveness of rotenone-containing products in combating cattle grubs, cattle lice, and sheep ticks and a phenothiazine in controlling many of the worm parasites of livestock.

The campaign to eradicate tuberculosis in cattle has resulted in the reduction of the disease in all counties of this region to

less than half of one per cent of the cattle.

Livestock inspections at public stockyards to detect and segregate diseased animals have contributed much to the prevention of the spread of infectious diseases to the livestock of the region. Not only are infected animals removed from further contact with healthy animals but in many cases the livestock owner receives his first knowledge of the existence of disease in his animals from this inspection.

Quarantine regulations to prevent introduction of diseases in farm animals have unquestionably averted severe outbreaks in this region. For example, foot-and-mouth disease has been brought into the United States six times, but in each instance complete eradication resulted from drastic domestic quarantines.

Experimental farm wind-break plantings of various tree species on different soils, conducted by the U. S. Field Stations at Mandan, North Dakota, and Cheyenne, Wyoming, in cooperation with farmers, have encouraged farm wind-break plantings in promising locations and helped to avoid attempts at planting with unsuitable trees or on unsuited soils.

Improved technique and improvements in corn production and harvesting machinery, developed in cooperation with the Iowa Agricultural Experiment Station, have reduced the man hours for producing the corn crop -- labor up to harvest to 3 man hours per acre compared with 5 to 9 man hours usually expended by progressive farmers, and for harvesting and cribbing to less than 1 man hour per acre compared with 1.5 and 2.5 usually expended when using a 2-row mechanical picker.

Wheat storage studies have given valuable information on bin design and construction and the most practical methods for holding wheat in long-time storage.

Principal field stations of the Agricultural Research Administration in the Missouri Basin, and areas within the Basin having soil surveys, are shown on the accompanying maps. (Maps 1 and 2)

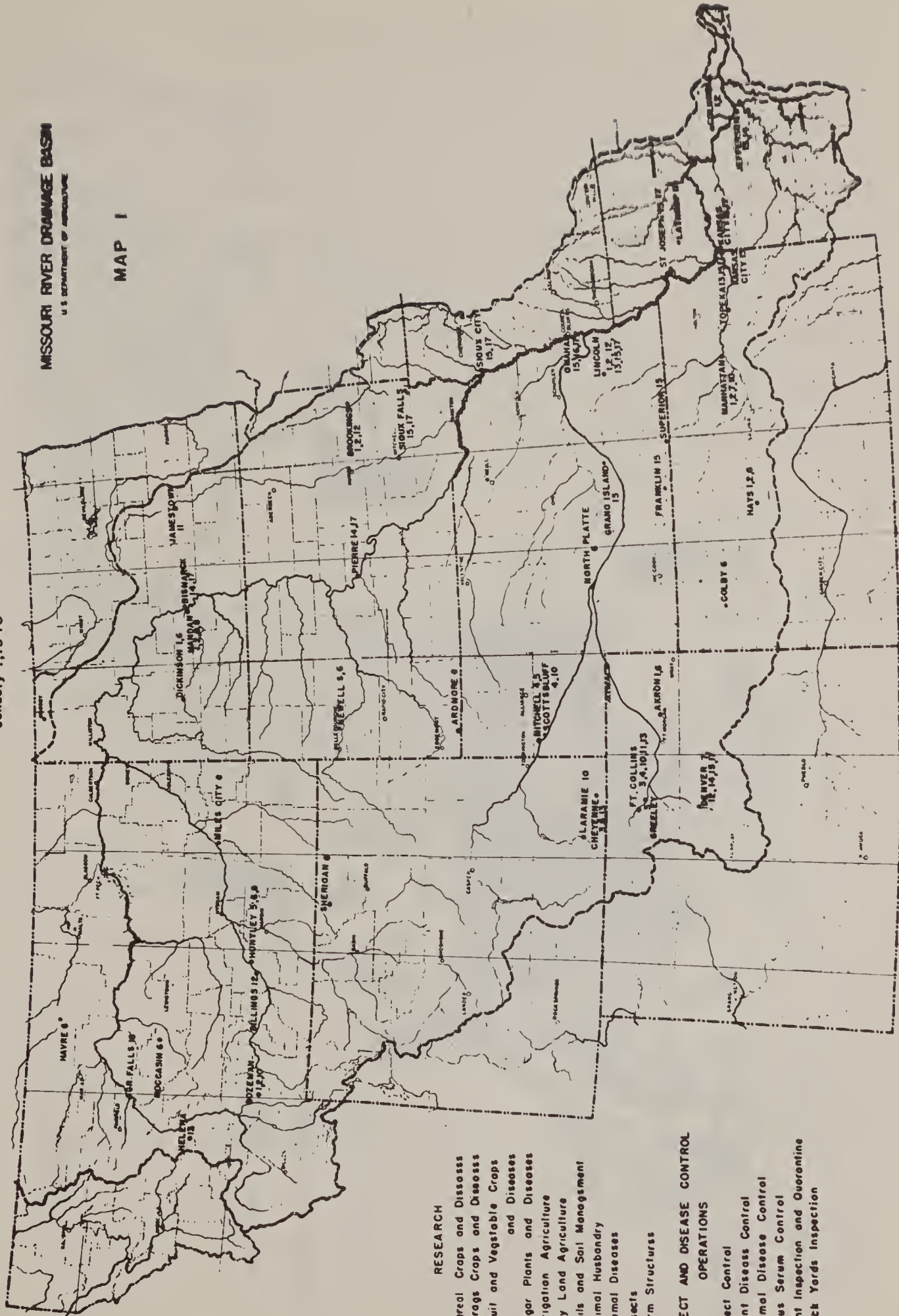
The greater part of the investigations for the purpose of developing new and wider industrial and food uses for agricultural products are carried on in four regional laboratories. At three of these, work of significance to the Missouri Basin is conducted: Peoria, Illinois (studies of corn, wheat, soybeans and agricultural residues); Philadelphia (studies of hides and skins, tanning materials, animal fats and oils, potatoes and milk products); and Albany, California (studies of alfalfa, wheat, potatoes, and poultry products and by-products).

AGRICULTURAL RESEARCH ADMINISTRATION PRINCIPAL FIELD LOCATIONS

January 1, 1946

MISSOURI RIVER DRAINAGE BASIN
U.S. DEPARTMENT OF AGRICULTURE

MAP I



RESEARCH

- 1 Cereal Crops and Diseases
- 2 Forage Crops and Diseases
- 3 Fruit and Vegetable Crops and Diseases
- 4 Sugar Plants and Diseases
- 5 Irrigation Agriculture
- 6 Dry Land Agriculture
- 7 Soils and Soil Management
- 8 Animal Husbandry
- 9 Animal Diseases
- 10 Insects
- 11 Farm Structures

INSECT AND DISEASE CONTROL OPERATIONS

- 12 Insect Control
- 13 Plant Disease Control
- 14 Animal Disease Control
- 15 Virus Serum Control
- 16 Plant Inspection and Quarantine
- 17 Stock Yards Inspection

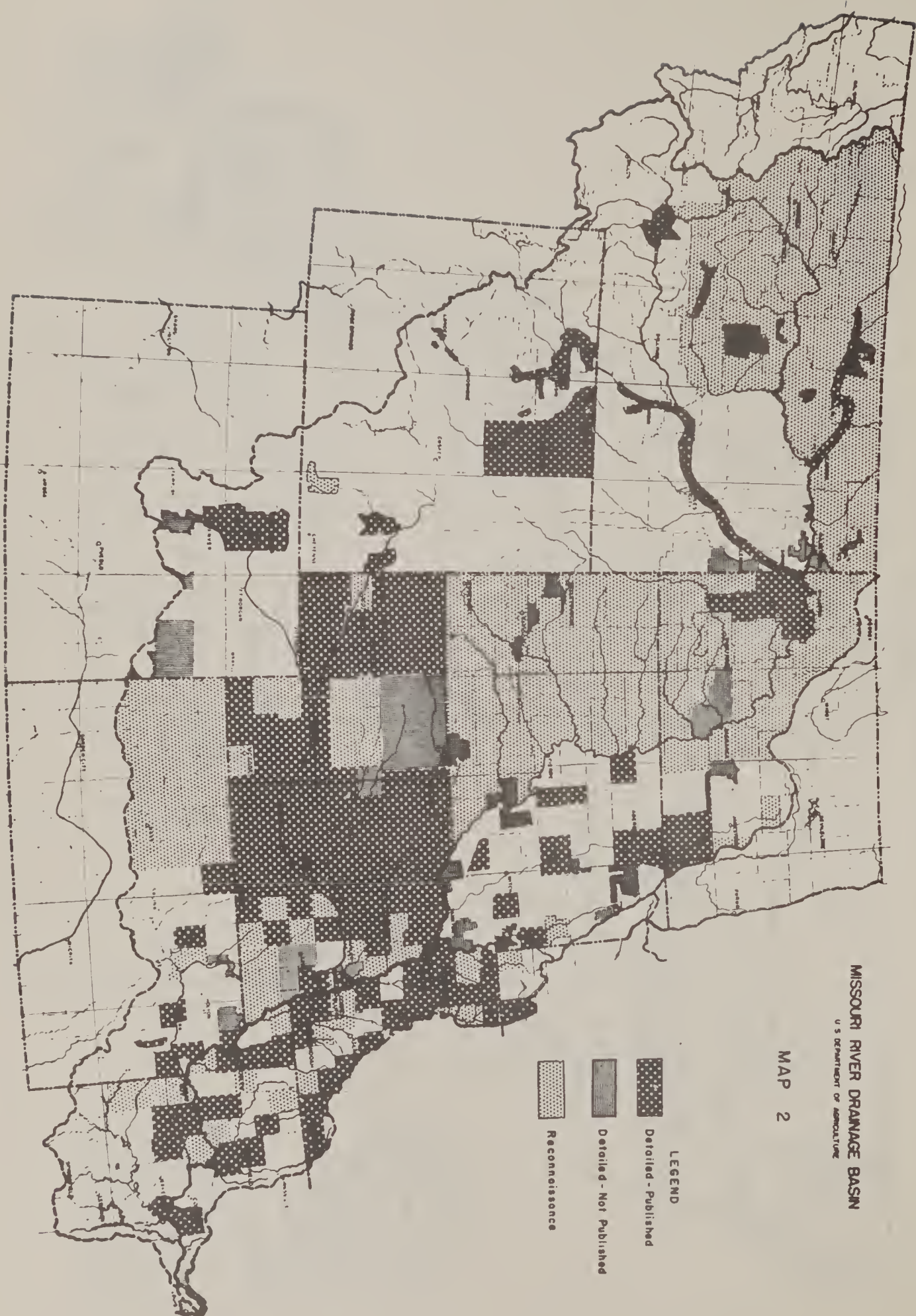
AREAS HAVING SOIL SURVEYS
January 1, 1946

MISSOURI RIVER DRAINAGE BASIN
U S DEPARTMENT OF AGRICULTURE

MAP 2

LEGEND

- Detailed - Published
- Detailed - Not Published
- Reconnaissance



BUREAU OF AGRICULTURAL ECONOMICS

Throughout the existence of this bureau the assigned functions have included responsibility for research in the economics of farming and marketing of farm products, and the collection, analysis and publication of statistics on agricultural production, farm income, farm prices, farm population, farm labor and other statistics useful to understanding and solution of farm problems. Both the economic research and statistical studies have dealt with Missouri Basin situations for three decades or more and have been carried out in cooperation with State Agricultural Colleges and other appropriate State and Federal agencies.

I. Available agricultural statistics for Missouri Basin

1. Crop Acres: - Available on annual basis by States and crop reporting districts and in some States by counties for all important crops. These annual estimates are available on both a planted and harvested acreage basis. Intentions to plant and actual plantings of the various crops are estimated during the year. Acreages of the various crops available for harvest are estimated periodically during the growing season. Ten-year average acreages of various crops are calculated.
2. Crop Yields: - available on annual basis by States and in some cases by crop reporting districts and counties for all important crops. Monthly crop condition reports are made for major crops including pasture during the growing season. Condition estimates are translated into per acre yields. Ten-year average yields are calculated.

3. Crop Production: - available by States, crop reporting districts and usually by counties. Production estimates are made throughout the growing season and after harvest on basis of the various acreage and yield estimates. A moving 10-year average of annual production of individual crops is maintained.
4. Other Crop Statistics: - Monthly, quarterly, and annual estimates are available on marketings, income from marketings, stocks on farms and in terminal elevators, and disposition of the important crops.
5. Livestock Numbers: - As of January 1 of each year, the number of each class of livestock on farms is inventoried for each of the States and in some cases for crop reporting districts and counties. Periodic reports on the number of cattle and sheep on feed are available on a State basis. Fall and spring pig crop reports by States are published. Number of chicks hatched by commercial hatcheries are reported monthly for each State.
6. Production of Livestock Products: - Monthly and annual estimates of milk and egg production are made for each State. Weekly reports covering the manufacture of cheese and butter are available. Livestock marketings are reported for the major markets. Number of chickens raised, number of pigs raised, number of calves and lambs saved, etc., are estimated annually for each State. Quantity of meat produced by each class of livestock is estimated.
7. Farm Prices: - Current prices of crops and livestock and livestock products are reported for States and in some cases crop

reporting districts. Indexes of prices received and paid by farmers are maintained currently.

8. Farm Labor and Wages: - Numbers of farm workers, family and hired, are estimated periodically for each State. Farm wages, with and without board, are reported monthly.
9. Farm Population: - Estimates are made of the number of persons on farms at various times for each State. Also, the composition of the farm population of each State is determined.
10. Much additional statistical data are available on the Missouri Basin as well as on other similar areas which would be applicable to the Basin.

II. Available research in Agricultural Economics of significance to the Missouri Basin

A. Over-all production and demand studies

1. Agricultural adjustment studies

- (a) A study of adjustments in farming by regions and type-of-farming areas from the standpoint of soil conservation was made in the various States in 1935-36.
- (b) Annual studies of agricultural productive capacity were made in each State from 1940 to 1945. In some States, in addition to State estimates, the capacity of each type-of-farming area was determined under conditions likely to prevail for the year ahead.
- (c) Estimated changes in agricultural production by 1950 based on an assumed set of agricultural prices.^{1/} These

^{1/} Farming Adjustments After the War -- Possibilities Under Prosperity Conditions.

studies were completed in 1944 to provide a bench mark for anticipating the volume of agricultural production for which a post-war demand must be found.

These studies were made in each State in cooperation with the State Agricultural Colleges and summarized on a national basis.

- (d) Estimated demand for agricultural products by 1950 based on an assumed set of prices and consumer purchasing power.^{2/} These estimates of physical volumes of agricultural products likely to be in demand under a given set of assumptions were translated into acres of crop land required to meet anticipated demands. These studies set up another bench mark against which to gauge probable competition that new acres will meet as they come into production.

B. Current research in farm management problems

1. Agricultural Adjustments in 1946: - Cooperative production adjustment research was continued in each State in 1945. Estimates of desirable crop and livestock production for the year ahead, 1946, were developed by State committees working in cooperation with the Bureau of Agricultural Economics and composed of representatives of interested State and Federal agricultural agencies. This work was then summarized by the Bureau of Agricultural Economics.

^{2/} What Peace Can Mean to American Farmers No. 1.

1946 agricultural production capacity was ascertained in light of national requirements for specific commodities and the expected availability of the productive resources of each State. This research work provided a basis for distributing production goals in keeping with the best use of the resources of each State. The committees also made recommendations for goal achievement. The abrupt ending of the war has necessitated reappraisal of these estimates in connection with the setting of 1946 State crop and livestock production goals.

2. Estimation of probable reduction from wartime record acreages of flax and soybeans and the effects of such adjustments on cropping systems and farm income.
3. Determination of more efficient methods and procedures for handling certain farm operations such as putting up hay and the cleaning of barns.
4. Balancing of livestock feed requirements and feed supplies for the feed year ahead.
5. Revision of type-of-farming area boundaries in keeping with agricultural adjustments in recent years.
6. Effects on farm income of a shift from current cropping systems to a conservation type of farming in particular areas
7. Determination of current farming systems, amount and sources of income and expenses, available supply of labor and its utilization. Adjustments to wartime conditions from pre-war and possible adjustments in returning to peacetime conditions.

8. Comparison of estimated carrying capacities of different types of pasture and a comparison of pasture yields, for each State and for certain regions. The acreages and total annual carrying capacities for different types of pastures were drawn from the State reports of the agricultural production committees.
9. Agricultural adjustments needed in the transition from war to peace in the various States if prospective price and demand conditions materialize in 1946 and 1947. Current and anticipated production levels compared with pre-war and long-time desirable levels.
10. Analysis of the organization and operation of family-size farm units. Potential income from such units and its adequacy for providing acceptable living standards.

C. Available research in land tenure and land utilization

1. Land use planning reports are available for each of the States and for several counties within the States. These were prepared by State and county land use planning committees composed of farmers and professional agricultural workers. These reports outline major land use problems, make recommendations for their treatment and suggest long-range plans for improving the agricultural economy of the area with which they are concerned.
2. Improved land tenure. A report is available recommending basic policies and principles for improving land tenure

in the North Central States of which the Missouri Basin is a part.

3. Farm Land Prices. A study of farm land prices is available covering the period between the two world wars and a special study beginning in 1941 has been made in selected counties of the Missouri Basin which provides information relative to farm land prices, number of farm sales, types of buyers and sellers, mortgage indebtedness, etc.
4. Land ownership. A study is under way on a national basis to determine the extent of various types of land ownership and how ownership was attained. This information will be summarized on a State basis so that it can be used in connection with the Missouri Basin.

D. Available research in farm population

1. Estimates of changes in farm population are released periodically by regions, States, and counties. These include changes due to migration, as well as natural increases and decreases.
2. Farm labor supply has been reported during the war period, giving an analysis of the composition of workers, whether family labor or hired labor. Wages for different periods of the year are reported.
3. An intensive study of rural trends has been made in counties statistically selected to be representative of major regions showing character and causes of migration and changes in rural living habits and attitudes.

III. Research for the year 1946-47 within the Bureau of Agricultural Economics program which pertains to irrigation farming

1. Study of the trends in water costs, crop acreages, yields, values on existing Federal Reclamation projects in the Missouri Basin.
2. Analysis of the crop acreages, yield and values by land classes on Belle Fourche and Lower Yellowstone Reclamation Projects.
3. Analysis of trends in land ownership and land transfers on Lower Yellowstone and Belle Fourche Reclamation Projects.
4. Analysis of size distribution of farms at start of project and present time on Lower Yellowstone and Belle Fourche projects.
5. Analysis of a sample of farms to determine relationship of class of land, size and class of farm to tenure, land use, livestock programs, income, expense, financial progress of operator, and the integration of irrigation to the surrounding area.
6. Study of the relation of land and water charges to farm income in existing irrigation projects and in areas proposed for irrigation.
7. Problems encountered in shifting from dry-land farming to irrigation in a sub-humid area; and relation of existing patterns of tenure, size of farms, land values, and farm organization to the rate of development of an irrigation project (Tri-County Area, Nebraska).
8. Analysis of irrigation enterprise organization and modifications that might be needed in future irrigation development.

Extension Work In The Missouri River Basin

Cooperative extension work "consists of the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending agricultural colleges." It is a cooperative service created by act of Congress and supplemented by agreements between the State agricultural colleges and the United States Department of Agriculture. It is financed cooperatively from funds appropriated by Congress, by State legislatures, and by county appropriating bodies. Its educational programs make available to farm people the research findings of the United States Department of Agriculture and the State experiment stations. The Cooperative Extension Service has had and will continue to have an important part in the development of agricultural resources of the Missouri River Basin.

Characteristics and Problems of the Area

Many types of farming are found along the Missouri River and its tributaries, as it meanders some 2,475 miles from Three Forks, Montana to its junction with the Mississippi just above St. Louis, Missouri. During its course it drains all Nebraska; most of Montana, South Dakota, and Wyoming; approximately half of North Dakota, Kansas, and Missouri; and smaller portions of Colorado, Iowa, and Minnesota. In this area, 5.2 percent of the people in the United States living on 17.5 percent of the total land area produce 16 percent of the hogs, 18 percent of the cattle, 24 percent of the sheep, 43 percent of the wheat, 27 percent of the sugarbeets, and about 20 percent of all grain and forage crops.

The type of farming developed in a particular area is determined by many factors, such as soils, rainfall, availability of irrigation water, length of growing season, topography, distance to market, and type of market demand. These factors account for the many types of farming in the Missouri Valley. These types range from the typical Corn Belt farms in the lower basin, the large wheat farms in the central area, the extensive range-livestock operation in the drier and rougher areas, to the intensive specialty crop irrigated farms in the semiarid western reaches of the watershed. In general, the farming in the basin is characterized by high crop risk because of the wide variation in rainfall from year to year over much of the area which causes crop failure or near failure in dry years, and flood losses in the lower basin when precipitation is heavy. This in turn causes alternate periods of low and high farm income which affect the stability of the population in the area and the standard of living that can be maintained by families living either in towns or on the farms. This fluctuation in income, together with extensive areas of sparse population, also results in inadequate public services and facilities, such as schools, health facilities, and electric and communication services, and relatively high cost of those that are available.

Organizations and Functions of the Extension Service

The Cooperative Extension Service is in intimate contact with the great variety of problems with which the farmers and their families have to deal. Extension is concerned with the problems of the people

as well as the problems of the land. It is interested in developing and using the agricultural resources of the area for the benefit of both the people living in the area and the Nation as a whole. Extension makes its services available to all the 500,000 farm families of the area, yet gives specific attention to special problems of such groups as irrigation farmers. As indicated in the following table, the States of the area have a staff of 283 agricultural and home economics specialists working on problems related to the soils, crops, livestock, insects, plant and livestock diseases, farm management, nutrition, home management, marketing, irrigation, housing, family living, health, and many others.

From 1 to 3 county extension agents, trained in agriculture or home economics, work in each of 350 counties of the area. This staff consists of 350 agricultural agents, 200 home demonstration agents, and 120 4-H agents or assistant agents. The activities of this entire group of workers are directed at the solution of problems determined by consultation with local committees of farm men and women.

The primary purpose of extension work through the last 35 years has been to help farm people through educational effort to establish in the Plains area a more stable type of agriculture, satisfying standards of living, and obtain adequate public facilities and services at moderate cost. There have been continuous efforts to smooth the curve of high production in humid years and low production in drought years. Smoothing the production curve tends to reduce the population movement

SELECTED EXTENSION PERSONNEL, MISSOURI BASIN STATES

July 1, 1945

STATE	Percentage of Cos. in Basin	SPECIALISTS				COUNTY EXTENSION AGENTS				Total Workers
		Total	Agri- culture	Home Economics	Other	Agricul- tural Agents	Home Agents	Other Co. Workers		
Montana	80	18	12	3	3	35	20	9	82	
N.Dakota	57	16	9	4	3	43	8	16	83	
Wyoming	78	12	7	4	1	20	12	7	51	
S.Dakota	96	18	9	3	6	45	25	10	98	
Nebraska	100	33	20	9	4	69	25	9	136	
Iowa	29	78	45	9	24	93	66	12	249	
Colorado	29	23	12	4	7	42	27	14	106	
Kansas	50	54	35	11	8	94	49	20	217	
Missouri	58	31	19	7	5	108	91	67	297	
Total		283	168	54	61	549	323	164	1,319	

caused by drought and waste in livestock resources through distress sales, and helps to stabilize the food supply of the Nation and improve the standard of living of farmers and townspeople alike.

The Cooperative Extension Service is well designed to render such service, and has demonstrated its ability through the years to help the people of the area cope with their problems. Its close association with the research work of the State experiment stations and the branch stations of the United States Department of Agriculture; its administration centered in the office of the State Director of Extension at the agricultural college; its corps of agricultural and home-economics specialists; its county staff of men and women trained in agriculture and home economics; and its programs developed with the assistance of local people place it in excellent position to assist the rural people with their problems, regardless of the types of farming in the localities in which they live.

Educational work, such as that rendered by Extension, is essential to any program that produces lasting results. It enables farm people to make full use of technical and service programs as those of the bureaus and agencies of the Department of Agriculture and the bureaus of other Government departments, which provide assistance in credit, supply, technical and other services.

Activities of the Extension Service

Following are a few of the major activities of the Extension Service in the Missouri River Basin:

1. Stabilizing the agriculture of the area

Since much of the Missouri Basin is a region of great natural hazards to farming operations principally because of the weather, fluctuations in production and income have been great. These hazards place great strain on the business organization of the farm or ranch, frequently forcing adjustment in the size and type of enterprises. Much work has been done to assist farmers to spread their risk by developing diversity in production of crops and livestock, where growing conditions and markets permit. This has included among many other practices the introduction of better adapted varieties resistant to drought and plant diseases, the control of insect ravages, summer fallow, the development of supplementary irrigation plants along the small streams, and the use of diversion dams and other means to spread water over areas to assure a feed crop. South Dakota has a whole series of farm production practices designed to "farm around July," their worst drought month. Earlier maturing varieties of grain, vegetables, and other spring crops are used; cultural practices to conserve moisture are stressed, and steps are taken to prevent losses from ravages of insects and plant diseases.

Another important part of this program has been the attention given to the home food supply -- the production and preservation

of food for the families producing it. This has been particularly important in the part of the area that normally imports a considerable part of its food canned. This program has featured adapted varieties of fruits and vegetables and various types of irrigation systems for gardens.

The outlook has long been an important feature of extension work as a means of aiding farmers and ranchers in the Basin to decide on production programs. This was of particular importance during the war period, when production efforts were at their peak and will be even more important as adjustments in production are made during the years just ahead.

Wise use of credit and sound financial management in farm business affairs is another long-established line of educational work with farmers. This includes information on sources of production and other credit and assisting farm families in planning and managing their finances. Much of this work is carried on in cooperation with Farm Credit Administration and other credit agencies.

2. Production efficiency

The size of the farm unit and efficiency in the use of labor, farm power, equipment, and structures are important factors in the successful operation of farms in this area. Many original homesteads and irrigated farm units were too small. The modern tractor and accompanying machinery revolutionized the whole picture as to size of the farm unit. This calls for new information and guidance.

The efficient use of labor has been particularly important during and immediately following the war. Farmers are being assisted in planning their labor needs and the distribution of the labor load so as to use their own time most efficiently. This involves adjusting type and size of enterprises, teaching the construction and use of many labor-saving devices, and use of labor-saving methods. A special labor-efficiency program in the use of both labor and machinery is being carried on in relation to such high labor cost crops as potatoes, sugarbeets, and vegetables.

The combining of dry farm land, irrigated land, and range land into efficient operating units is another approach to improving production efficiency. This includes assistance in determining the best size of unit and the most profitable combination of crop and livestock enterprises.

3. Crop production

Extension's educational programs are spreading the newer varieties of wheat, oats, and barley as rapidly as they are proved by the experiment station and seed is available. As an example of the effectiveness of this work, it is reported that in 1945, 90 per cent of the wheat production of North Dakota was of improved varieties that were unknown in the State 10 years ago.

Pasture and forage production are of major concern in the area. Improved pasture mixtures, both for irrigated and dry-land farms, have been featured. This preceded and is now supplementary

to the programs of the Production and Marketing Administration and the Soil Conservation Service. Better methods of harvesting and curing hay are now receiving major attention. These methods are being publicized through study and demonstration of new methods and equipment, use of moving pictures, and other means.

One of the most important crop-production problems of the area is control of noxious weeds. This problem is being attacked through weed-control districts, by controlling weed spread along irrigation ditches, by careful seed cleaning to remove weed seed, by use of special tools for eradication of bind weed and similar weeds, and by use of such special controls as chemicals and flame.

Campaigns for the eradication or control of such pests as prairie dogs, have been carried on cooperatively with the Fish and Wildlife Service. Grasshopper and other insect control campaigns have been conducted cooperatively with the Bureau of Entomology and Plant Quarantine.

4. Livestock problems

Livestock problems with which Extension has been concerned include adequate feed supply, improved breeding stock, control of parasites, and provision of adequate water supply and shelter. Efforts have been made to increase the feed supply which is closely associated with the economic problems of the area through the proper use of available water, better pasture mixtures, rotation grazing, and conservation of feed surpluses produced

during humid years. The forest reserves are an important source of livestock feed. The county agent has had an important part in the programs of the Bureau of Animal Industry and the Bureau of Entomology and Plant Quarantine in controlling the insects and livestock parasites of the area. In 1945 some 3,400,000 cattle west of the Mississippi River were treated for grubs. The use of rotenone in the control of cattle grubs increased to approximately 340,000 pounds in 1945. More would have been used had the insecticide been available. Approximately 80 per cent of the present acreage under irrigation is devoted to the production of feed crops. Livestock production and irrigation are thus interrelated.

5. Marketing problems

Marketing problems must be taken into account along with those of production, farm management, and resource-use. Extension work in marketing has covered a wide range of commodities including wheat, livestock and livestock products, and specialty crops such as potatoes, fruits, and vegetables. Information on and assistance with the organization and operation of marketing associations has been part of the program. The sale of cattle produced on the range to Corn Belt feeders is facilitated. Many new marketing problems are expected to arise as the development of the Basin proceeds and new crops produced on irrigated lands are ready for market. These should be anticipated and taken into account in the planning of well-rounded educational programs.

6. Conservation and utilization of resources

As a basis for programs directed at best use of agricultural resources, most of the counties in the Basin area have been conducting land use studies since 1938. These studies are made in cooperation with local committees. Technical representatives of public agencies and farmers together study the land and water resources and the best ways of using them. Crop rotation, soil and water conservation and irrigation received major consideration depending upon the need of the area concerned. Educational services were provided to help farmers with their terraces, dams and irrigation structures. Livestock feed balances are worked out by type of farming areas. Area production and capacity studies are made available to farmers and discussed with them. Many discussion-type meetings are held to bring about better understanding of problems of taxation, public services, and other matters of public policy.

Guidance to returning veterans and others desiring to farm is particularly important in a changing economy such as much of that of the Basin area. It is also important in post-war years when veterans are returning to civilian life. Counseling services by experienced farmers have been set up in most of the counties. Literature has been developed giving information on the requirements for successful entry into farming. The full resources of the Extension Service are made available to the returning veteran and other young men looking for opportunities in farming.

The most important resource of this area, as elsewhere, is its youth. The development of the area can achieve its highest goal only when adequate provision is made for full educational, social, and recreational opportunities for young people. Such provision is necessary (a) to keep the young people needed in the area and to prepare them for agriculture and homemaking, and (b) to help build in those who must leave standards of value and attitudes that will help them become useful citizens, regardless of the occupation they choose or the area in which they live. Young people can help lift living standards on their home farm; they can be mobilized to help build social and recreational opportunities in their community; they can be trained for effective leadership either urban or rural; thus, young people can help to build for themselves the kind of community in which they will want to live.

The area will produce approximately twice as many young people as can be retained profitably in agriculture or related occupations. As long as they live in a rural area, Extension has the responsibility of bringing to them as many as possible of the activities that will help them to get satisfactions from rural life, make them proficient as farmers or homemakers, or help them to choose the occupation they desire to enter. These things can be most easily done during their formative years.

Extension's 4-H Club program is specifically designed to assist in this type of training and guidance. Its provision for

ownership on a small scale progressively enlarging to partnership with parents, and finally complete management, gives opportunity to learn and to apply modern methods. The members' experience with democratic procedures through their local club organization helps them to fit into adult society. Opportunity to share with others their group responsibilities gives leadership training for more useful adult citizenship. The 4-H program has demonstrated its peculiar ability to mobilize young people around desirable farm, home and community activities. The participation of young people in such activities has helped them to build stronger moral fiber within themselves.

In the Basin area approximately 25 per cent of the young people have 4-H Club experience.

7. Improving living standards

The activities of the Extension Service are based on the belief that the desire for higher standards of living and their attainment go hand in hand. The means to both these ends is education in its broadest sense. Perhaps the most potent influence on rural life today and one that will continue to increase is the spread of urban living standards to farm people. County extension agents have a big responsibility in interpreting desirable urban standards and their proper application to country conditions. Home demonstration agents are assisting farm families in making the most of what they have and in guiding those who have the desire for

a higher standard of living. A resourcefulness that makes the most of opportunities at hand is the very essence of an enduring rural culture.

To raise the level of living conditions on farms today, special attention is given to families with lowest incomes. Through understanding and individual attention, such families can be helped not only for their own benefit but for that of the community. By agricultural planning, farm and home procedures and practices are being considered in relation to each other and adjusted to the condition and needs of the particular farm and the income available. Guidance in the initial planning and carrying out an integrated farm and home program is being given by county extension agents to new farm families such as those of war veterans who have little or no farming experience. Families settling on new farms receive such guidance also.

In peacetime, families producing more of their food at home can release more of their income for necessities and comforts other than food. Also, a diet that insures sound nutrition and better health is more likely because of variety made possible by home production. Gardens to furnish vegetables for use fresh and for preservation, fruit gardens where feasible, adequate milk supply, home poultry flocks and the raising of meat animals receive emphasis in better-living-at-home programs. Improved methods in home canning and the preparation of fruits, vegetables,

and meats for freezer lockers will continue as important phases in food and nutrition programs.

The need for improvement of rural housing is urgent and important. Extension specialists and agents assemble and make available plans for farm dwellings and other farm buildings that are practical and appropriate for the particular locality. There is a heavy demand for suggestions for remodeling and small improvements involving less expense to make old homes more livable. With rural-electrification projects under way, extension agents are giving increasing assistance to rural families in the selection and proper use and care of farm and home electrical equipment. There are 1,400,000 potential rural consumers of electric power in the Missouri Valley.

Families are encouraged to go forward with pride and determination in making their homes still better places in which to live. Young men and women who return from fields of battle must be convinced that success and contentment can be found on farms and in villages. General unattractiveness of homes inside and out and lack of farm and home conveniences and labor-saving equipment are repellant to the young men and women today. Ways and means of making homes more comfortable and attractive, improving the appearance of the farmstead and countryside, putting into practice better home-management plans, installing labor-saving equipment are emphasized in all educational programs as essentials in upholding family morale, and as aids to health and happiness.

Those conversant with the health situation in rural America know that there is an appalling lack of health facilities in many of the farm areas. Farm people want better health facilities. The immediate interest of extension agents is cooperating with other educational and public services in the bringing of facts and ideas before farm people for discussion, and encouraging them to plan to help themselves. Group and committee action leads to the consideration of health legislation, the setting of county goals in equipping the county or communities with a public health unit, clinics with the necessary facilities, medical and hospital services available to a larger number or all. Extension forces have been cooperating with Public Health services in conducting infant and pre-school children clinics.

Continued educational effort in relation to nutritional deficiency diseases, common communicable diseases, home nursing and first aid, and farm and home safety is in progress. Sanitation improvements also list high in the educational health program. North Dakota, Nebraska and Kansas employ extension health specialists. Organized home and community recreation are gaining importance.

The farming population has long since recognized that it is good business to study farms in an area and work out an agricultural program that will yield, within a given time at least, the income sufficient for the desired standard of living. Along with

increased incomes for family living, ways and means of enriching rural community life also must and are being found.

Educational Work Prior to the Development of Irrigation and Other Projects

In the various areas where development projects are contemplated, much controversy can be avoided if local people thoroughly understand the advantages and disadvantages of a project and the local adjustments that will need to be made. This understanding can be best brought about through public discussion based on information from reliable sources. Such discussion should supplement newspaper stories, radio talks, circulars, and other forms in which information is presented to the public. Extension can assemble reliable information and promote such discussion, usually through such existing organized groups as farm-organization locals, civic clubs, youth organizations, and parent-teacher associations.

Extension Work in Relation to Further Development of Water Resources of the Missouri River Basin

Practically all of the services enumerated earlier in this report will be important as the water resources of the Missouri Basin are developed for agricultural use. The developments proposed will influence farm people far beyond the project area. As electric lines are extended from the power developments, problems will arise concerning the best use of electricity on the farm. Farm people will expect assistance with planning of electric services and water systems. They will demand much information concerning the economical and efficient

use of electrical appliances both on the farm and in the home.

New markets will need to be found for products, and farmers will require information and assistance concerning preparation of the products for market.

Extension will be expected to assist farm operators in adjusting to several types of changed situations. Following are four of the more important:

1. Many farmers whose experience has been in the extensive agriculture of the plains will seek locations on smaller irrigated farms where the type of farming will be more intensive. All the complex relationships of a new type of farming will need to be learned. This group also will include new settlers from other areas with varying farm experience.
2. Combination dry land-irrigation farmers whose present predominant type of farming is extensive will have irrigation developments nearby where feed production will be possible on irrigated land. New production practices will need to be learned and new enterprise relationships worked out. Labor requirements will be different.
3. Farmers displaced from inundated areas will need to find new locations either as dry land farmers or in the new irrigated areas. This group like the others listed will have to learn new farming methods.

4. Ranchers now producing winter feed on low areas that will be inundated must find other sources of feed supply.

These are problems on which much helpful assistance can be given through extension programs developed by consultation between agriculturally trained representatives of the agricultural college, the United States Department of Agriculture, and committees of farmers concerned.

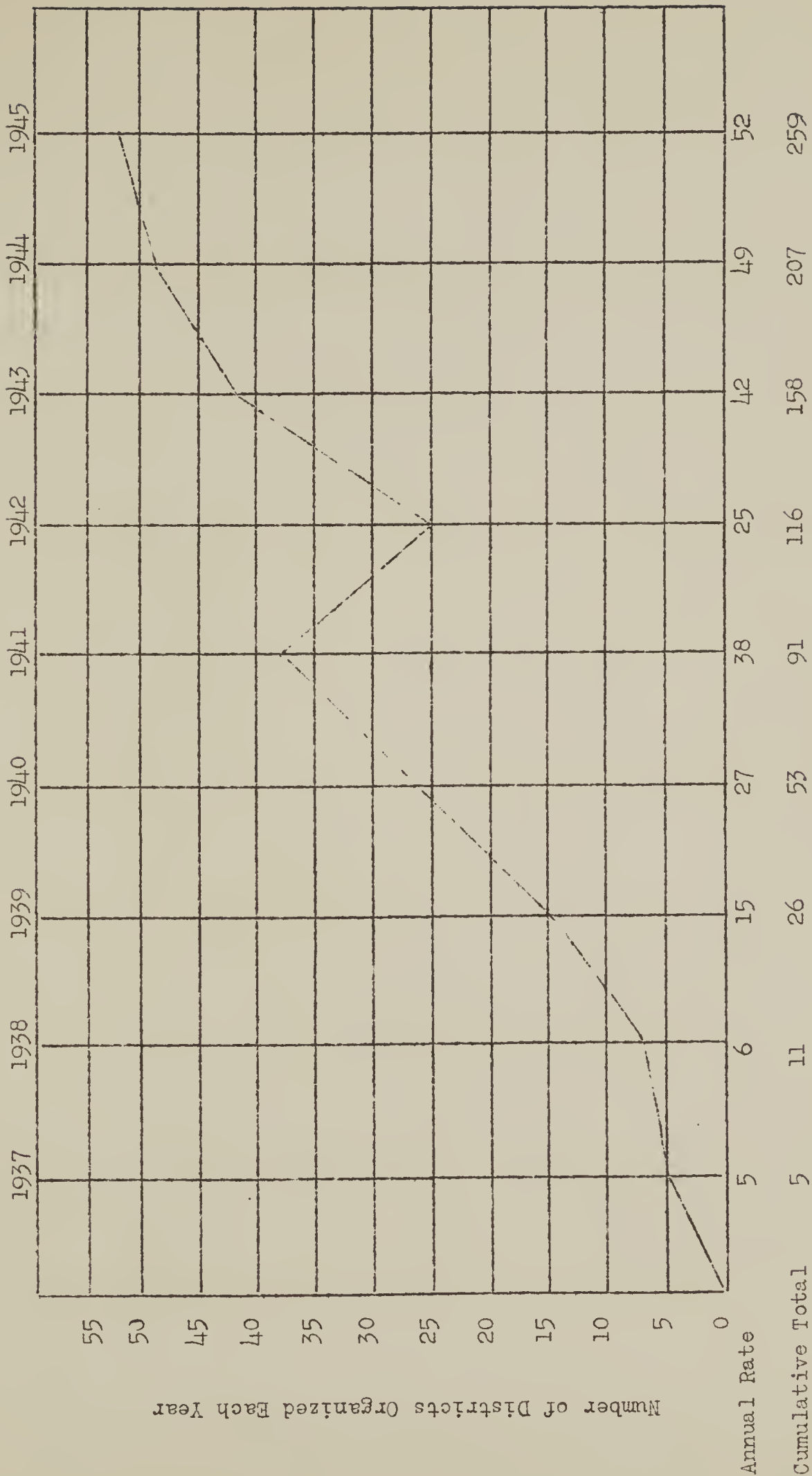
Soil Conservation Service

The Soil Conservation Service has conducted a program of soil and water conservation, water utilization, and sound land use in the Missouri River Basin for the past eleven years. The Basin includes approximately one-fifth of the Nation's land area, over 348,584,000 acres, in Colorado, Iowa, Kansas, Minnesota, Montana, Missouri, Nebraska, North Dakota, South Dakota, and Wyoming.

In the early phases of the program, Soil Conservation Demonstration Projects were developed in which use of labor from the Civilian Conservation Corps and the Works Progress Administration was included. From these early projects grew an expanded program by farmers and ranchers through soil conservation districts. Cooperation with these districts now represents the principal activity of the Service.

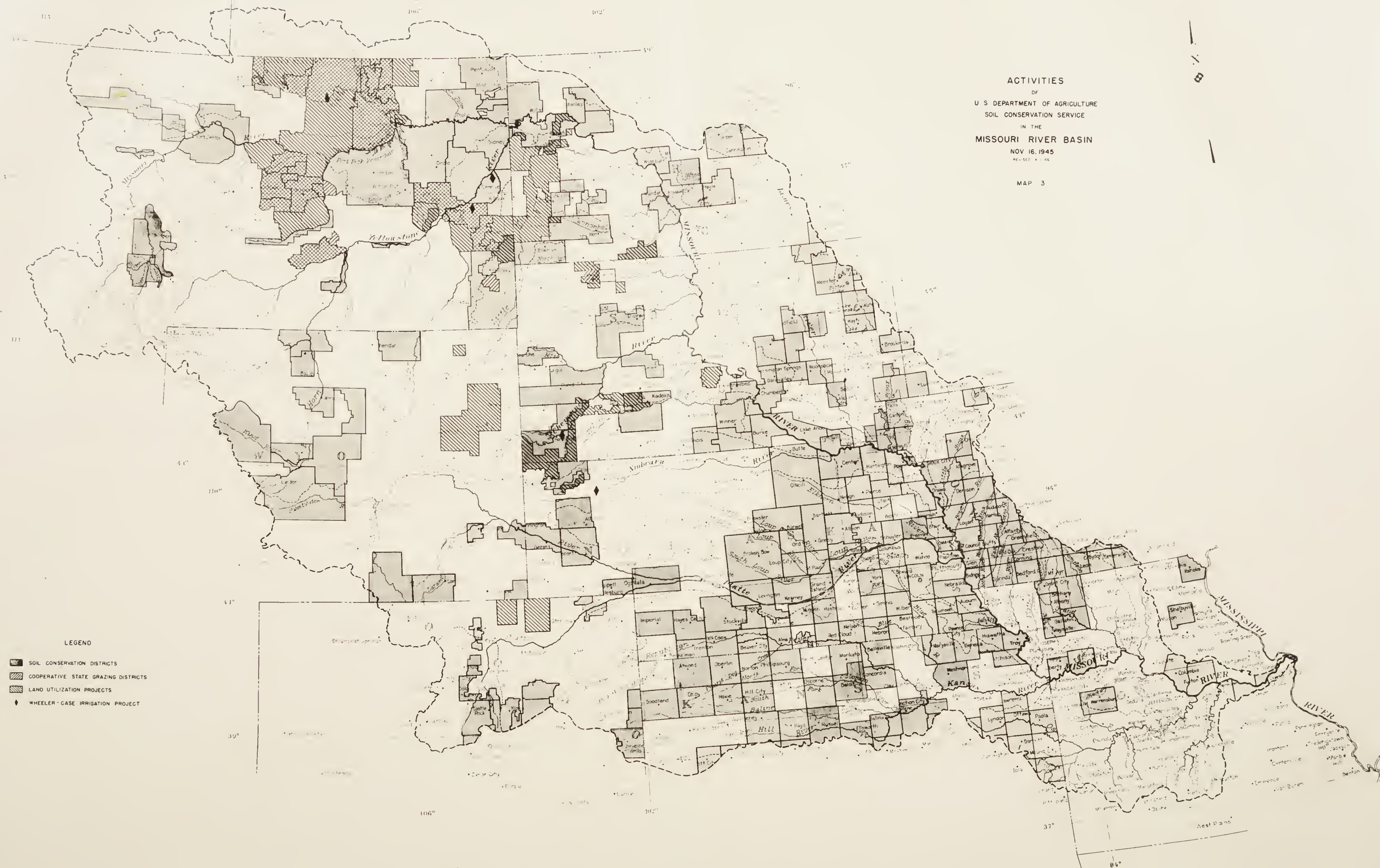
As of April 1, 1946, the Soil Conservation Service is furnishing technical assistance and a limited amount of equipment and materials for soil and water conservation to 290 soil conservation districts in the Basin. (See Map 3) These districts embrace 124,589,205 acres of land, or 36 per cent of the total land in the Basin. New districts have been organized by farmers and ranchers in the Basin at a rapid rate. (See accompanying chart) To date, every district has requested assistance from the Soil Conservation Service. In addition, assistance is furnished to 20 grass conservation districts in Montana which include more than $7\frac{1}{2}$ million acres. These districts are organized and operated by farmers and ranchers under State Law. Service assistance is based

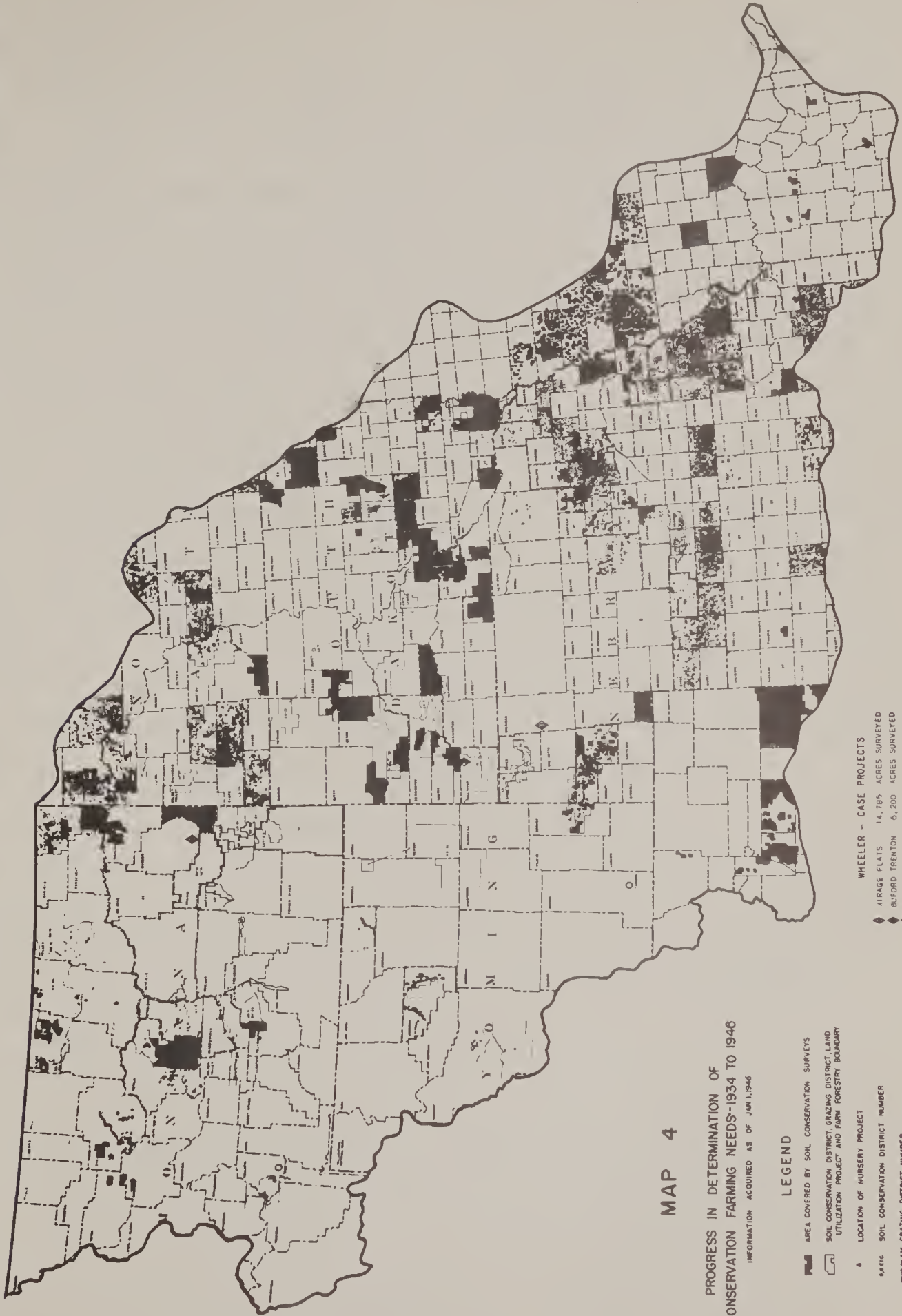
RATE OF ORGANIZATION OF SOIL CONSERVATION DISTRICTS in the MISSOURI RIVER BASIN



ACTIVITIES
OF
U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
IN THE
MISSOURI RIVER BASIN
NOV 16, 1945
REVISED 4-1-46

MAP 3





MAP 4

PROGRESS IN DETERMINATION OF
CONSERVATION FARMING NEEDS-1934 TO 1946
INFORMATION ACQUIRED AS OF JAN 1, 1946

LEGEND

- AREA COVERED BY SOIL CONSERVATION SURVEYS
- SOIL CONSERVATION DISTRICT, GRAZING DISTRICT, LAND UTILIZATION PROJECT AND FARM FORESTRY BOUNDARY
- LOCATION OF NURSERY PROJECT
- STATE SOIL CONSERVATION DISTRICT NUMBER
- NATIONAL GRAZING DISTRICT NUMBER
- LAND UTILIZATION PROJECT NUMBER

WHEELER - CASE PROJECTS

AIRAGE FLATS	14,785 ACRES SURVEYED
BUFORD TRENTON	6,200 ACRES SURVEYED
ANGUSTORA	41,000 ACRES SURVEYED
BUFFALO RAPIDS	26,133 ACRES SURVEYED

on the principle that all work done will be in accordance with conservation plans for individual farms and ranches or other land units.

The demand for Service assistance to district cooperators in developing, establishing and maintaining farm and ranch conservation plans on irrigated acreages is fast becoming as extensive as the requests for similar work on dry-land farms. There are about 4 $\frac{1}{2}$ million acres of irrigated land in the Basin of which 40 per cent is within soil conservation districts.

The Service administers the Land Utilization Program for the acquisition, development, and management of lands primarily submarginal or not suitable for cultivation. There are 17 projects in the Basin embracing more than 21 million acres, of which 4,607,333 acres have been purchased under Title III of the Bankhead-Jones Act. These purchased acres are being used by farmers and ranchers in the surrounding area thereby resulting in economic operating units.

The Service also administers the Department of Agriculture's responsibility in the Case-Wheeler Program. There are now 11 irrigation projects being developed in which acreage already brought under irrigation together with that to be watered when the projects are completed approximates 125 thousand acres.

The Flood Control Act of 1936 as amended and supplemented, including the Flood Control Act of 1944, provides that "Federal investigations of watersheds and measures for run-off and waterflow retardation and soil erosion prevention on watersheds shall be under the jurisdiction of and shall be prosecuted by the Department of Agriculture under

the direction of the Secretary of Agriculture." This responsibility has been delegated to the Soil Conservation Service and to the Forest Service. Funds for the program first became available in the fiscal year 1938. During the war work on the program was suspended but is now being gradually resumed.

The procedure followed is similar to that for the Corps of Engineers. First, the making of preliminary examinations and surveys on specific watersheds is authorized by the Congress. Practically all of the watershed of the Missouri River and its tributaries have thus been authorized for investigation. Second, a preliminary examination is made to determine whether or not the benefits appear sufficiently promising to warrant the time and expense of making a detailed field survey. Negative preliminary examination reports are transmitted to the Congress and conclude investigative work on the areas to which they apply unless a review report is authorized by the Congress. Third, where preliminary examination reports are favorable, a detailed survey report is made. After appropriate Departmental and other Executive approvals, survey reports are transmitted to the Congress for consideration and, if a watershed treatment program under the Flood Control Acts is recommended, for approval and authorization. Following Congressional authorization, the Department may proceed to install the measures recommended in the survey report, provided funds therefor are available, in accordance with such limitations as the Congress may have placed thereon.

The status of preliminary examinations and surveys under the Flood Control Act in the Missouri Basin is as follows:

- A. Favorable survey report approved and operations authorized by the 1944 Flood Control Act on the Little Sioux River watershed in Iowa. Unfavorable survey report transmitted to the Congress on a special drainage project in connection with flood control in the Eillings Area in Montana.
- B. Favorable preliminary examinations recommending that detailed survey reports be prepared completed for the following watersheds:

- Big Horn, Wyo. and Mont.
- Cheyenne, Nebr., S. Dak. and Wyo.
- Powder, Wyo.
- Yellowstone and tributaries, N. Dak., Mont. and Wyo.
- Boyer, Iowa
- Dry Run Creek, Iowa
- Bear Creek of South Platte River, Colo.
- Cherry Creek, Colo.
- North Platte, Wyo., Colo. and Nebr.
- South Platte, Colo., Wyo. and Nebr.
- Big Blue, Kans. and Nebr.
- Republican, Nebr., Kans. and Colo.
- Smoky Hill, Kans. and Colo.
- Chariton, Iowa
- Chariton, Mo.
- Osage (Upper), Kans. and Mo.

Unfavorable preliminary examination reports transmitted to Congress for the following watersheds:

- Cannonball and Grand, N. Dak. and S. Dak.
- Heart, N. Dak.
- Knife, N. Dak.
- Little Missouri, Wyo., S. Dak., N. Dak. and Mont.
- Moreau, S. Dak.
- Weldon, Mo. and Iowa

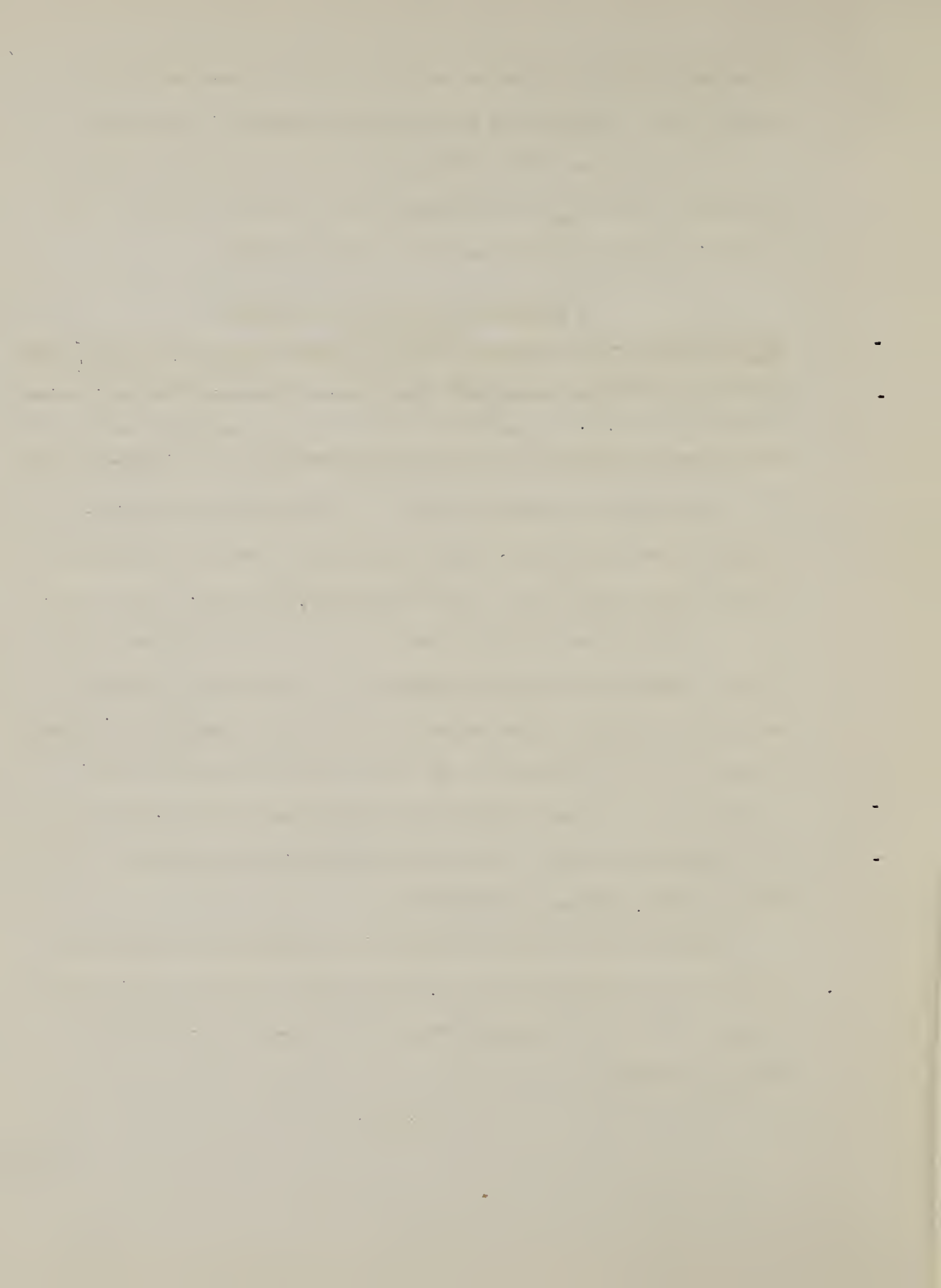
The Service program is based on the principle that each acre of land should be treated in accordance with its needs and capabilities.

To achieve this, it is Service policy to make an inventory of the physical land conditions as a basis for recommending treatments in conservation plans. The following table shows progress to January 1, 1946 (see also Map 4) and estimates for the period January 1, 1946 to June 30, 1946, and July 1, 1946 to June 30, 1947:

CONSERVATION SURVEYS IN MISSOURI RIVER BASIN			
Surveys Completed :	Estimated, Jan. 1, 1946 :	Estimated, July 1, 1946	
to Jan. 1, 1946 :	to June 30, 1946 :	to June 30, 1947	
:	:	:	
21,766,786 acres :	1,000,000 acres :	2,530,500 acres	
:	:	:	

Principally in cooperation with soil conservation districts, 31,634 farmers and ranchers have been helped to develop and establish complete conservation plans embracing 16,065,977 acres. These conservation plans include treatments for virtually every condition in the Basin. Examples of these treatments are: Adjustments in land and water use; control of wind and water erosion; development of livestock water facilities; development and improvement of irrigation land; land drainage; and establishment of conservation measures, practices, and facilities in aid of flood control and for the reduction of silting of land, streams, and reservoirs.

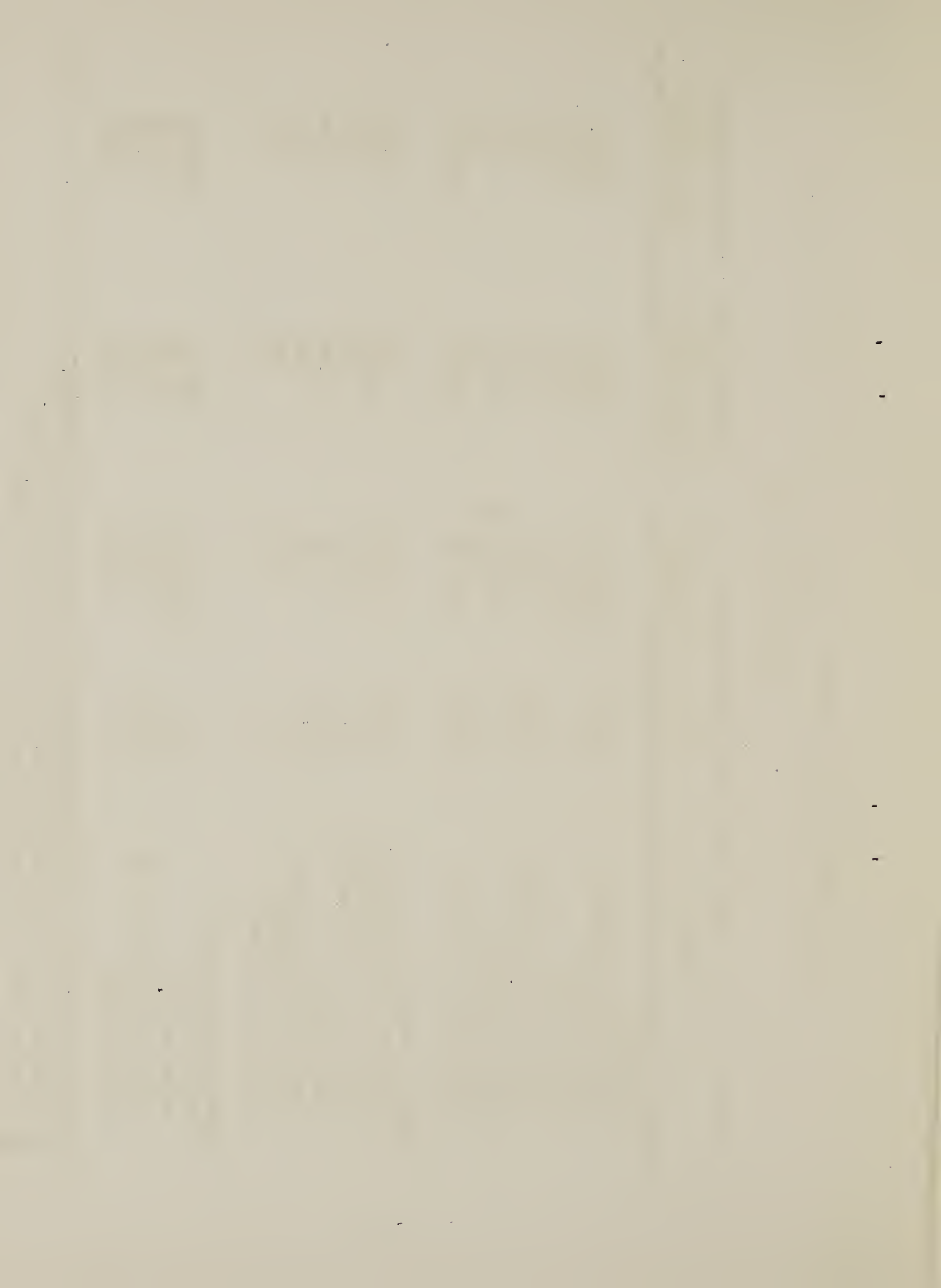
Representative practices employed in conservation treatment are shown in the accompanying table, together with estimates of the practices to be applied during the remainder of fiscal year 1946 and the fiscal year 1947.



REPRESENTATIVE PRACTICES APPLIED TO DATE AND ESTIMATES OF AMOUNT TO BE APPLIED
in the
MISSOURI RIVER BASIN

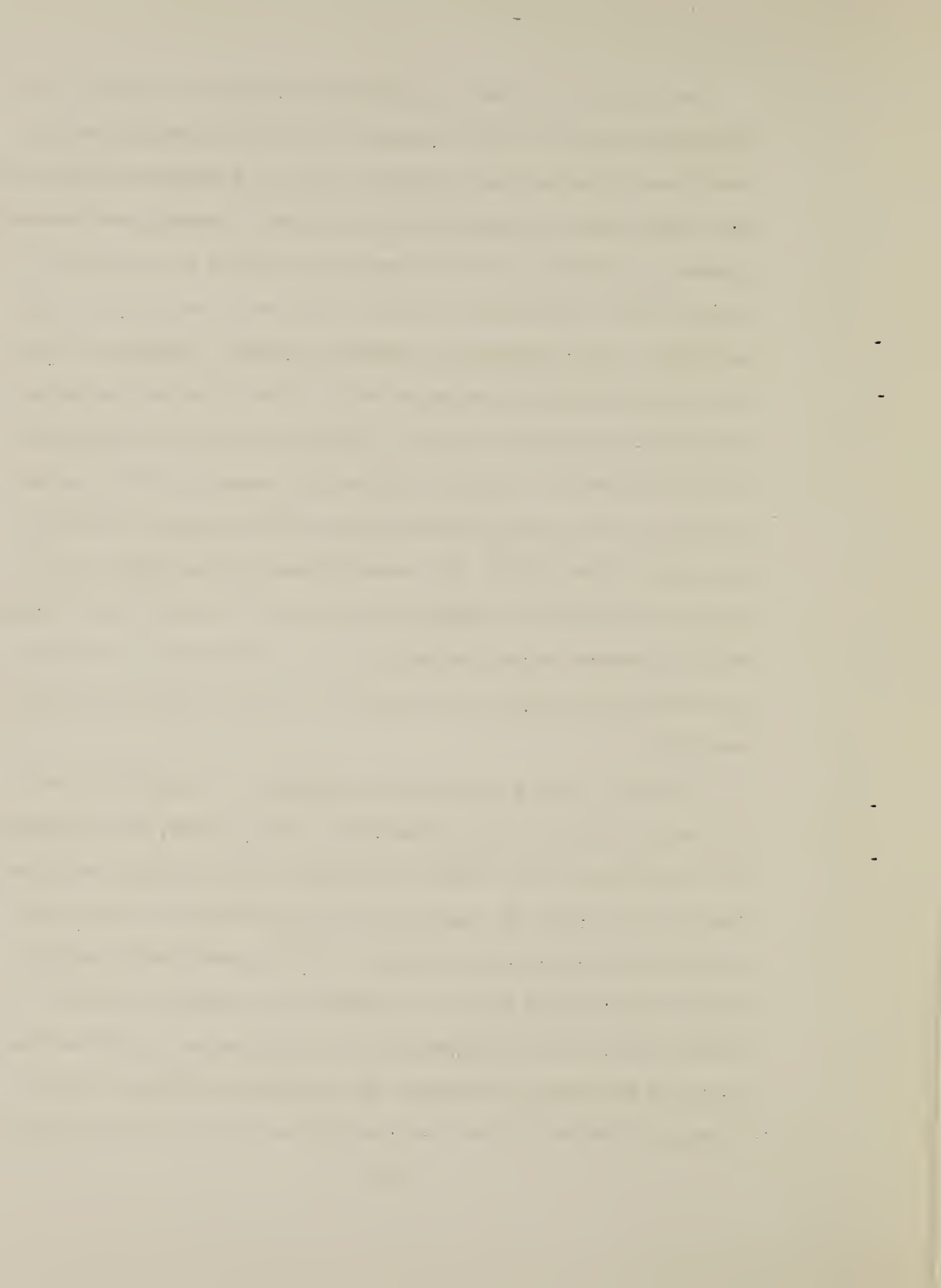
Practice	Unit	Total Applied To Date	To Be Applied	
			Jan. 1, 1946 to July 1, 1946	July 1, 1946 to July 1, 1947
CROPLAND (Dry)				
Crop Residue Management	Acres	2,383,772	252,700	752,800
Contour Planting	"	1,530,276	349,500	866,700
Strip Cropping	"	1,007,190	90,100	145,500
Terraces and Diversions	Miles	10,192	1,300	4,200
Outlets and Water Courses	A cres	21,089	2,700	6,500
Woody Plantings <u>1/</u>	"	144,289 <u>2/</u>	5,900	7,400
Flood Control Dikes	Miles	276	75	185
Rotation Hay and Pasture	Acres	395,302	74,800	183,000
CROPLAND (Irrigated)				
Farm Distribution Systems	Number	2,795	670	1,800
Improved Water Application	Acres	137,223	25,200	75,100
Main Laterals and Canals	Miles	498	110	260
Land Leveling	Acres	78,132	13,700	31,200
Irriga tion Facilities <u>3/</u>	Number	962	120	310
Irrigation Structures	"	6,337	840	2,500
Main Drainage Ditches	Miles	80	4	15
RANGE AND PASTURE LAND				
Range Management	Acres	21,898,519	821,700	1,970,000
Grass Seeding	"	1,020,104	75,300	160,000
Stock Water Facilities <u>4/</u>	Number	16,552	1,650	4,200
Contour Furrows	Acres	173,822	9,100	28,500
Water Spreading	"	36,793	4,800	13,500

- 1/ Field Shelterbelts, farmstead windbreak, and field and gully plantings.
2/ Includes 111,878 acres of Prairie States Forestry Project plantings.
3/ Includes storage and diversion dams, wells and surface pumps.
4/ Includes dams, dugouts, springs and wells.



The using of land and related water resources in accordance with their capabilities, and the treatment of land in accordance with its needs, constitute the basic principle of the Soil Conservation Service's work. This work is accomplished by maintaining a coordinated technical approach to problems of soil and water conservation and land use in assisting soil conservation and other districts to develop and carry out locally adapted programs, conducting research, informing the public of the need for and advantages to be derived from soil and water conservation and proper land use, acquiring and rehabilitating lands to assist districts in solving problems that cannot be solved satisfactorily in other ways, and providing so far as possible for local management of such lands. The accomplishment of those jobs aids in bringing about physical adjustments in land use that will better human welfare, conserve natural resources, aid in establishing a permanent and balanced agriculture, and reduce the hazards of floods and sedimentation.

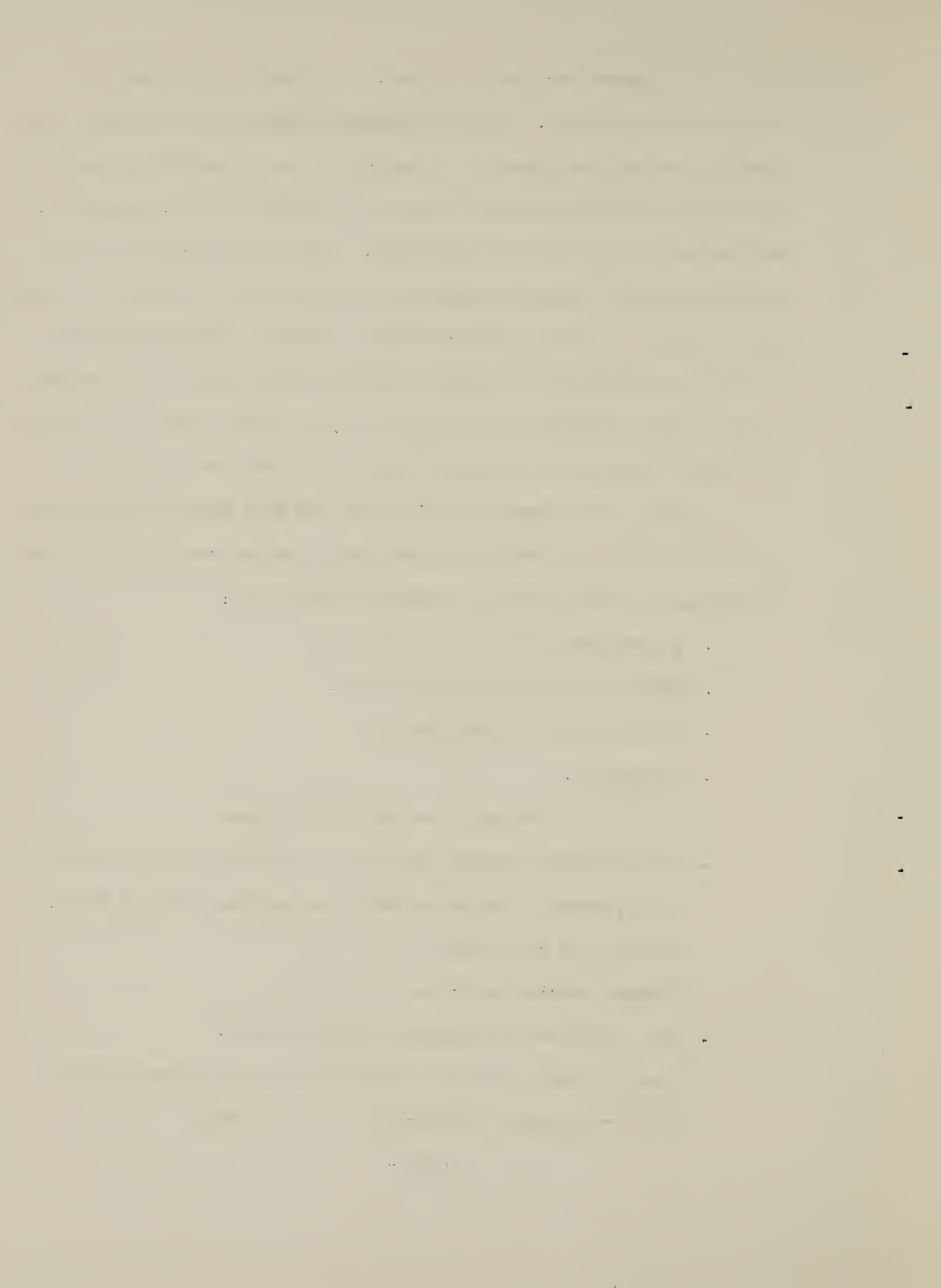
The work of the Soil Conservation Service is authorized by the following legislative acts of Congress: Public Law 46, 74th Congress; the Flood Control Act of 1936 and subsequent acts including the Flood Control Act of 1944; the Bankhead-Jones Farm Tenant Act, Title III; and the Case-Wheeler Act as amended. Briefly, under Public Law 46, the Soil Conservation Service is authorized to cooperate with soil conservation and other districts in the establishment of adapted conservation practices and treatment of the different kinds of land in accordance with their needs and capabilities and with the development



of a sound economy for each land unit. The Flood Control Acts have already been mentioned. The Bankhead-Jones Farm Tenant Act, Title III, provides for the development of a program of land conservation and land utilization including the retirement of lands which are submarginal or not primarily suitable for cultivation. Under the Case-Wheeler Act as amended, the Soil Conservation Service develops land on irrigation projects designated by the Secretary of the Interior, acquires and sells lands on such projects and extends technical assistance in the construction of capital improvements on such land, and gives advice and guidance in matters relating to conservation and sound land and water use.

Broadly, the following activities of the Soil Conservation Service are brought to bear on physical land problems which rarely exist individually, but nearly always in various combinations:

1. Adjustments in land and water use.
2. Erosion control (wind and water).
3. Livestock water development.
4. Irrigation.
5. Drainage of irrigated and other farm lands.
6. Conservation measures, practices, and facilities in aid of flood control, and the reduction of sedimentation of lands, streams and reservoirs.
7. Highway erosion control.
8. Soil fertility maintenance and improvement.
9. Conservation and storage of water underground for recovery for agricultural, industrial, and other uses.



10. Stream bank erosion control.
11. Dune stabilization.
12. Development by clearing, leveling, etc. of land suitable and needed for more intensive agricultural use.
13. Acquisition, development and management of lands that cannot be controlled in private ownership.

A comprehensive study has been made by the Soil Conservation Service and estimates prepared for the conservation treatment which should be applied in that portion of the Missouri River Basin in the Northern Great Plains Region. These estimates are compiled by Basic Land Resources Areas and include the various kinds of treatment considered necessary together with the resources required to apply them in order to obtain an adequate program of soil and water conservation and proper land use. The various Basic Land Resource Areas or portions thereof have been given a priority rating based upon the intensity of need for conservation treatment. With this information as a basis, critical areas from the standpoint of needed conservation treatment can be located and given the assistance needed.

Work plans developed thus far by soil conservation districts, grass conservation and other districts, with the Soil Conservation Service's assistance, give direction to proper soil and water conservation development within the area and set up the principles to be applied in developing more detailed conservation plans on each operating unit in the area. Although they are adequate for normal Service field operations, it is recognized continuing information is needed to integrate these plans into Basin-wide soil and water conservation and other activities.



Rural Electrification Administration

Purpose and Scope

The Rural Electrification Administration was created for the purpose of financing a rural electrification program to make electric energy available to persons in rural areas who are not receiving central station service. The Rural Electrification Act as amended provides for the making of loans to persons, corporations, States, territories, and subdivisions and agencies thereof, municipalities, people's utility districts and cooperative, non-profit, or limited-dividend associations organized under the law of any State or territory of the United States. All loans are self-liquidating within a period not to exceed 35 years and bear interest at the rate of 2 per cent per year. The Act provides that sums made available shall be allotted for loans in the several States in respect of a formula which considers the proportion of farms without electric service and those farms already electrified.

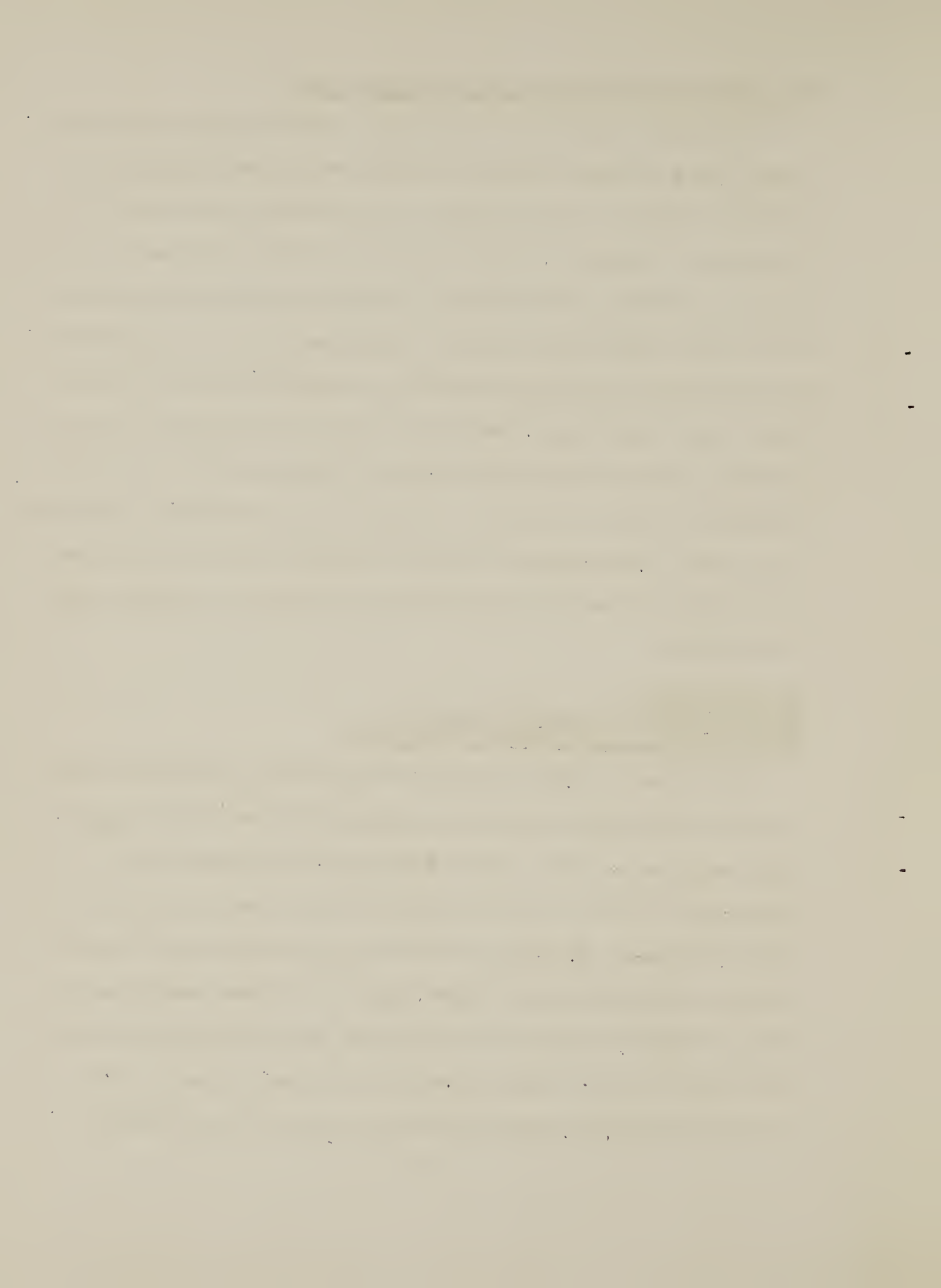
The Rural Electrification Administration provides advisory assistance to borrowers in connection with the financing and construction of rural electric distribution systems. This is primarily assistance in connection with proper safeguards in use of Federal funds, and helping REA borrowers in area-coverage development, proper design of lines in view of REA standards, audit and accounting and problems concerning the management and operation of the system.

Rural Electrification in the Missouri River Basin

In 1935 only about 8 per cent of the farms in the States (Colorado, Kansas, Iowa, Missouri, Montana, Nebraska, North Dakota, South Dakota, Wyoming) in which the Missouri River Basin is located had central station service available. In 1945 about 36 per cent of the farms had central station service. While this is evidence of considerable progress in electrification, there is still a tremendous job to be accomplished. The development so far has been in the most densely populated and more stable farm communities. Further development will necessitate reaching into more sparsely settled areas. Most of the Basin is in an area of high power rates. This has been a handicap to the expansion of the farm use of power. Development of additional sources of cheap power in the Basin will enable the rural electrification program to go forward with great strides.

The Role of the Rural Electrification Administration in Electrification of the Missouri River Basin

As of June 30, 1945, the Rural Electrification Administration had a total of 130 borrowers in the Missouri River Basin. (See Map 5) These borrowers had been allotted \$70,500,000 to construct about 68,000 miles of line to provide central station electric service to 163,500 consumers. Slightly more than 50 million dollars had been advanced, and 122 systems with 50,250 miles of line were energized. A total of 113,000 consumers were connected. About three-fourths of the total connections were farms. During the year ended June 30, 1945 more than 188,000,000 kilowatt hours were used by these consumers.



REA BORROWERS IN MISSOURI RIVER DRAINAGE BASIN



Less than 2 per cent was generated by REA cooperatives. REA-financed systems are serving about half of the farms receiving central station service in the States in which the Missouri River Basin is located. In light of the sparseness of the settlement in much of the area it is quite likely that REA-financed systems will be called upon to complete a large part of the job of farm electrification.

From July 1 to December 31, 1945, a total of \$19,000,000 was allotted to borrowers in the Missouri River Basin which provided for construction of about 16,000 miles of line to serve about 34,000 consumers. Thirteen new borrowers in this area received their initial allotments during this period.

Therefore, as of January 1, 1946, a total of \$79,500,000 had been allotted with which to build about 84,000 miles of line to serve 197,500 consumers in the Missouri River Basin.

Benefits of Rural Electrification

Electricity on the farm is no longer a luxury but has become a necessity for efficient farm production and management and for better farm living. It saves time, labor and money. Its effective use is reflected through increased production for home use and for commercial markets, thus increasing the real income of the farmer. It modernizes rural community facilities for better health, education, and recreation, and for the development of rural industries. When the development of these industries depends upon or is improved by the use of modern methods of production, the presence of electricity will prove to be one of the factors which spurs expansion and leads to ultimate success of the undertaking. The use of low cost electricity gives the assurance of efficient, economical power.

Farm Credit Administration

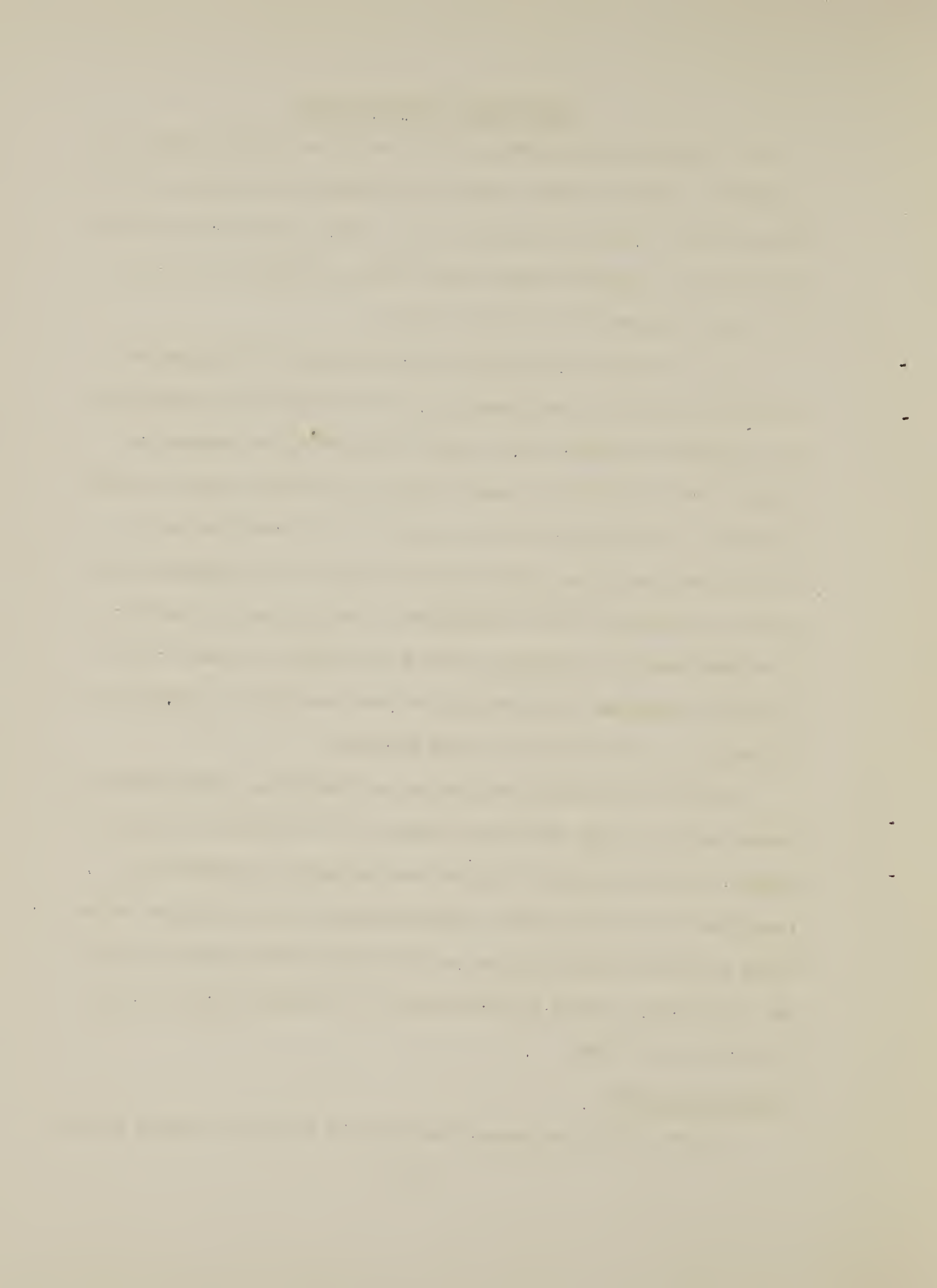
The institutions and offices which comprise the Farm Credit Administration furnish credit services to farmers and stockmen and their cooperatives. This brief summary of the lending operations of these institutions is shown for those States located entirely or in part within the Missouri River drainage basin.

As an industry, agriculture is characterized by family-sized individually operated farm units, by seasonal and cyclic operations, long production periods, small capital turn-over, low returns on capital and by inability to make adjustments rapidly to meet changes in demand. In addition to these inherent characteristics and the ordinary business risks, agriculture is subjected to limitations imposed by conditions of the environment in which farms are located. These environmental conditions include the surface features of the land, soil structure and fertility, weather and climate, markets and transportation facilities and other factors.

Because of these characteristics and conditions, agriculture requires special credit facilities adaptable to its special requirements. The authority creating the various credit institutions, supervised by the Farm Credit Administration, with subsequent amendments generally provides sufficient flexibility for expansion to meet the agricultural credit requirements of the Missouri Basin through the fiscal year 1947.

Federal Land Banks

Farmers needing long-term financing can be served through Federal



land bank loans. These loans are made on the security of first mortgages on farms and ranches in amounts up to 65 per cent of the appraised normal value of the farm. Such loans may be made to buy land, for buildings and improvements, to refinance indebtedness, to buy equipment, fertilizer, livestock, and for general agricultural purposes. The annual rate of interest is 4 per cent.

The loans are made through national farm loan associations which are cooperative organizations composed of borrowers. Each farmer subscribes to stock in his local association in an amount equal to 5 per cent of the loan. The local association purchases an equal amount of stock in the Federal land bank.

Table I
Federal Land Banks
Lending Operations of National Farm Loan Associations in States
Located Entirely or Partly Within the
Missouri River Drainage Basin 1/

States	: Farm Credit : Districts :	:	Federal Land Bank Loans Outstanding December 31, 1944	
			Number	Amount
Missouri	: St. Louis	:	8,803	: \$21,168,737
North Dakota	: St. Paul	:	9,684	: 29,258,753
Minnesota	: St. Paul	:	2,211	: 10,103,298
South Dakota	: Omaha	:	10,017	: 33,075,749
Nebraska	: Omaha	:	17,647	: 71,008,521
Wyoming	: Omaha	:	2,436	: 7,919,851
Iowa	: Omaha	:	9,358	: 50,511,221
Colorado	: Wichita	:	6,402	: 16,459,610
Kansas	: Wichita	:	12,110	: 36,094,968
Montana	: Spokane	:	2,656	: 6,681,000
Total	: 5	:	81,324	: \$282,281,708

1/ See Map 6, National Farm Loan Association Territories and Offices.

Federal Farm Mortgage Corporation

Long-term credit is also available through Land Bank Commissioner loans. While such loans have been made since 1933, the authority to make them expires on June 30, 1946. These loans may be made on the security of either first or second mortgages for amounts, including any prior lien, up to 75 per cent of the appraised normal value of the farm. The amount of the Commissioner loan, however, may not exceed \$7,500 to one farmer. The purposes for which such loans are made are substantially the same as the purposes for which the Federal land bank loans may be made. The interest rate on Commissioner loans is 5 per cent. While national farm loan associations assist in making and servicing Commissioner loans, no stock purchase is required.

A land bank and a Commissioner loan may be made on the same property. Land bank loans are made repayable in annual or semi-annual installments which will amortize the entire amount in a period usually from 20 to 34-1/2 years. Commissioner loans may be made on an amortization basis for similar periods but are often for shorter terms. Both types of loans may be repaid in part or in full before the expiration of the regular amortization period.

In determining the amount that may be loaned to a farmer or rancher, account may be taken of additional earning power and value which may result from improvements which are to be made to the farm, such as irrigation, drainage, etc. It has generally been the policy, however, that loans will not be made in a new irrigation district until there is reasonable assurance that farming can be conducted successfully in the project.

Table II
Federal Farm Mortgage Corporation
Lending Operations of National Farm Loan Associations in States
Located Entirely or Partly Within the
Missouri River Drainage Basin 1/

States	: Farm : Credit : Districts :	:	Federal Land Bank Commissioner Loans Outstanding December 31, 1944	
			Number	Amount
Missouri	: St. Louis	:	6,928	: \$ 7,924,998
North Dakota	: St. Paul	:	7,077	: 9,852,848
Minnesota	: St. Paul	:	1,141	: 1,936,928
South Dakota	: Omaha	:	6,745	: 9,397,191
Nebraska	: Omaha	:	9,392	: 15,999,349
Wyoming	: Omaha	:	2,006	: 2,527,274
Iowa	: Omaha	:	4,516	: 8,680,994
Colorado	: Wichita	:	4,340	: 5,380,432
Kansas	: Wichita	:	7,784	: 11,694,150
Montana	: Spokane	:	2,446	: 3,924,000
Total	: 5	:	52,375	: \$77,318,164

1/ See Map 6, National Farm Loan Association Territories and Offices.

Production Credit Corporation

Short-term credit to finance farm production and operations is available through production credit associations, organized on a cooperative plan. Each borrower must be a member of his association and own stock equal in amount to at least 5 per cent of his loan. Final action on all loan applications with the exception of those in excess of certain amounts or to certain officials is determined by the association's loan committee.

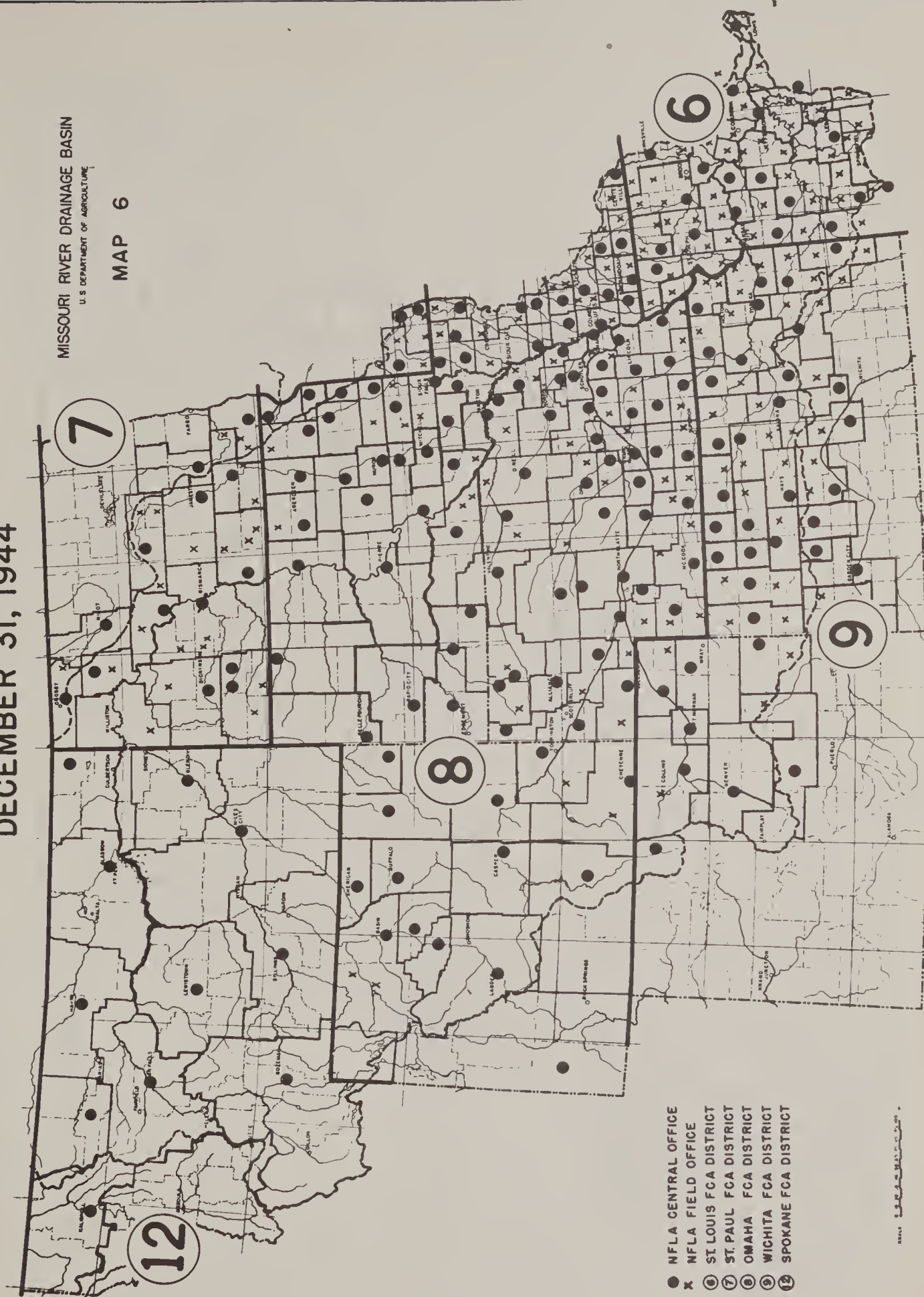
The rate of interest on such loans is 4-1/2 per cent. In addition to interest, most associations charge loan service fees to cover part of the cost of inspecting the borrower's farming operations, searching lien records, and recording security instruments. The borrower usually gives

NATIONAL FARM LOAN ASSOCIATION TERRITORIES AND OFFICES

DECEMBER 31, 1944

MISSOURI RIVER DRAINAGE BASIN
U.S. DEPARTMENT OF AGRICULTURE

MAP 6

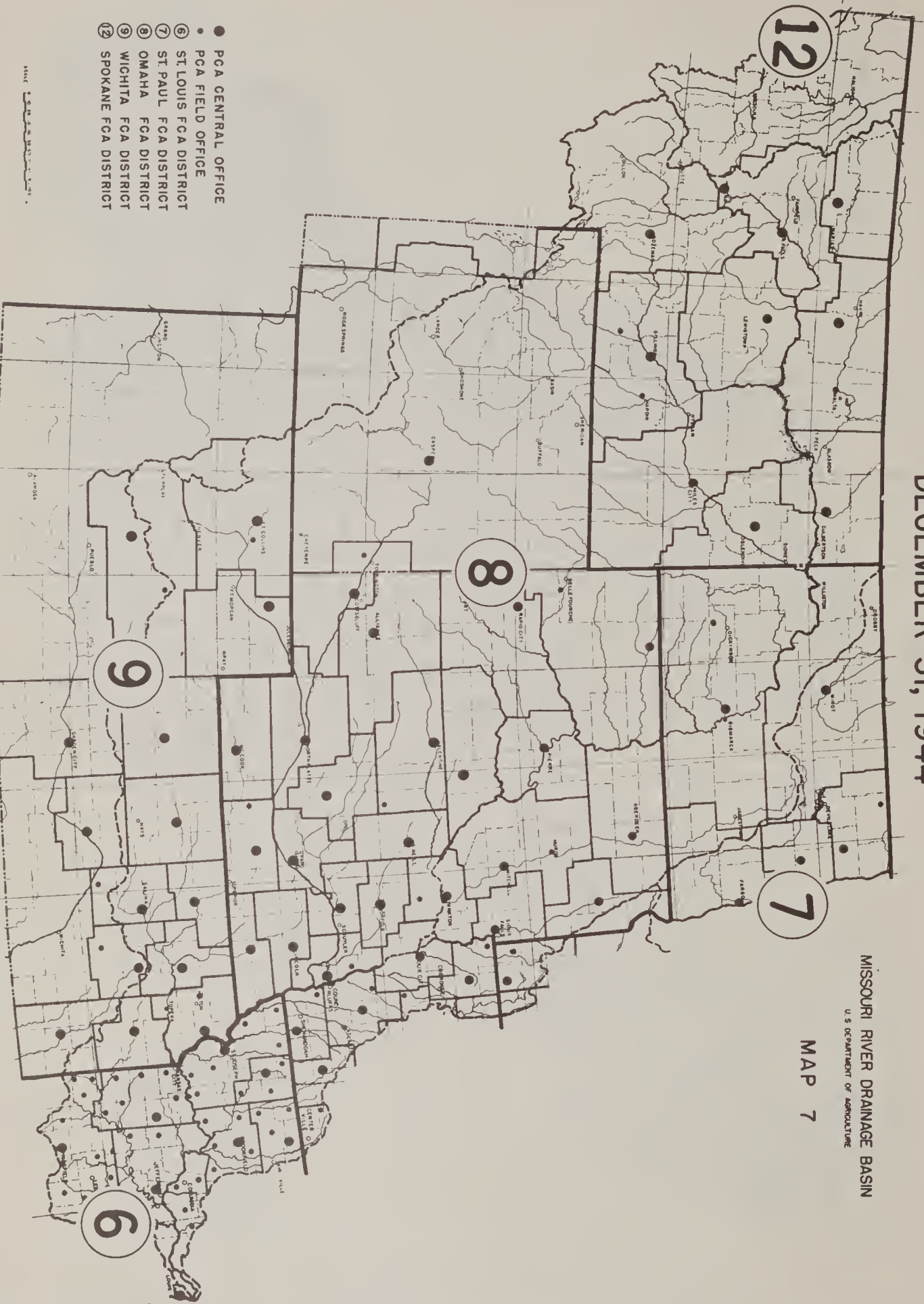


- NFLA CENTRAL OFFICE
- X NFLA FIELD OFFICE
- ⑥ ST. LOUIS FCA DISTRICT
- ⑦ ST. PAUL FCA DISTRICT
- ⑧ OMAHA FCA DISTRICT
- ⑨ WICHITA FCA DISTRICT
- ⑫ SPOKANE FCA DISTRICT

PRODUCTION CREDIT ASSOCIATION TERRITORIES AND OFFICES DECEMBER 31, 1944

MISSOURI RIVER DRAINAGE BASIN
U. S. DEPARTMENT OF AGRICULTURE

MAP 7



- PCA CENTRAL OFFICE
- PCA FIELD OFFICE
- ⑥ ST LOUIS FCA DISTRICT
- ⑦ ST PAUL FCA DISTRICT
- ⑧ OMAHA FCA DISTRICT
- ⑨ WICHITA FCA DISTRICT
- ⑫ SPOKANE FCA DISTRICT

Scale 0 50 100 Miles

a first mortgage on crops and livestock as security for the loan.

Loans are made to farmers and ranchers for all types of farm operations including the purchase of feed, seed, fertilizer, spray materials, gasoline, tile, cement, lumber, fencing and other farm and family needs; to pay for livestock, poultry, machinery, labor, and professional services; and to pay rent, taxes, interest, and insurance. The loan funds may be advanced as needed and repaid when income is received in accordance with a budgeted program based upon the entire year's operation. Loans are generally made to mature within one year. Renewals of a portion of some types of loans are frequently anticipated at the time the loans are made, thereby spreading the repayment of capital loans over more than one year if necessary.

Table III
Production Credit Corporation
Lending Operations of Production Credit Associations in States
Located Entirely or Partly Within the
Missouri River Drainage Basin 1/

States	:	:	Stockholder	:	Production Credit Loans Made			
	:	Farm	:	Members as of	:	Fiscal Year Ending		
	:	Credit	:	June 30, 1945	:	June 30, 1945		
	:	Districts	:	Number	:	Number	:	Amount
Missouri	:	St. Louis	:	10,513	:	6,877	:	\$14,072,099
North Dakota	:	St. Paul	:	2,787	:	1,630	:	3,533,003
Minnesota	:	St. Paul	:	589	:	432	:	1,729,292
South Dakota	:	Omaha	:	3,890	:	2,367	:	8,670,896
Nebraska	:	Omaha	:	4,319	:	2,639	:	11,845,567
Wyoming	:	Omaha	:	507	:	241	:	3,991,019
Iowa	:	Omaha	:	3,015	:	2,120	:	10,916,136
Colorado	:	Wichita	:	970	:	587	:	3,120,402
Kansas	:	Wichita	:	3,636	:	1,830	:	6,959,566
Montana	:	Spokane	:	4,857	:	2,968	:	15,453,370
Total	:	5	:	35,083	:	21,691	:	\$80,291,350

1/ See Map 7, Production Credit Association Territories and Offices.

Banks for Cooperatives

The banks for cooperatives provide a specialized type of credit designed to meet the needs of farmers' cooperative associations engaged in marketing farm products, purchasing farm supplies, or furnishing farm business services. The loans may be made (1) to finance the processing, packing, handling, or marketing of farm products or the manufacture and distribution of farm supplies or other similar operations, (2) to finance or refinance the purchase, construction, or lease of physical facilities, or (3) to assist in carrying inventories of commodities being marketed for or sold to members of the cooperative. The present rates of interest are 1-1/2 per cent on commodity loans, 2-1/2 per cent on operating capital loans, and 4 per cent on facility loans. Each cooperative which borrows from a bank for cooperatives must purchase stock in the bank equal to \$100 for each \$2,000 of loan or fraction thereof which is borrowed. In the case of commodity loans, the stock requirement is somewhat less.

Table IV
Banks for Cooperatives
Lending Operations in States Located Entirely or Partly Within the
Missouri River Drainage Basin

States	: Farm : Credit : Districts	Loans Made		Loans Outstanding	
		Fiscal Year 1945		June 30, 1945	
		Number 1/	Amount	Number 2/	Amount
Missouri	: St. Louis	: 47	: \$ 8,272,986	: 32	: \$ 3,182,775
North Dakota	: St. Paul	: 14	: 414,117	: 25	: 115,224
Minnesota 3/	: St. Paul	: -	: -	: -	: -
South Dakota	: Omaha	: 4	: 48,700	: 10	: 46,080
Nebraska	: Omaha	: 14	: 910,038	: 24	: 197,331
Wyoming	: Omaha	: 11	: 413,566	: 6	: 205,064
Iowa	: Omaha	: 48	: 6,765,426	: 57	: 2,780,353
Colorado	: Wichita	: 16	: 1,467,264	: 31	: 1,198,656
Kansas	: Wichita	: 41	: 7,734,831	: 37	: 9,231,556
Montana	: Spokane	: 3	: 624,615	: 6	: 142,823
Total	: 5	: 198	: \$26,651,543	: 228	: \$17,099,862

1/ Represents number of commitments upon which initial advances were made.

2/ Represents number of cooperative associations having loans outstanding.

3/ Data omitted because of small area of Minnesota located within the
Missouri River Drainage Basin.

Emergency Crop and Feed Loans

Crop and feed loans are available to farmers who cannot obtain a loan from other sources and whose cash requirements are small. Such loans are made to permit a farmer to produce sufficient crops with which to repay his loan and at the same time enable him to continue his farming operations and, through such operations, meet the needs of his family and care for his work and other livestock. One of the regulations requires that applicants must agree (1) to use seed and methods approved by the Department of Agriculture, (2) to plant a garden for home use, and (3) to plant a sufficient acreage of feed crops to supply feed for their work stock.

The loans are limited in amount to \$400 and carry a rate of interest of 4 per cent. Applications for loans are taken by field representatives assisted by local crop loan committees.

TABLE V - EMERGENCY CROP AND FEED LOANS

Number and amount of loans made during the fiscal years 1943, 1944, and 1945 and the number and amount of loans outstanding on June 30, 1945, in selected States

States	Loans made during fiscal years						Loans outstanding	
	1943			1944			June 30, 1945 a/	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Missouri.....	981	\$ 128,820:	806	\$ 135,460:	491	\$ 90,165:	27,484	\$ 2,088,748
North Dakota.....	2,401	574,410:	1,953	546,575:	1,844	550,420:	188,424	37,164,312
Iowa.....	425	98,135:	476	126,155:	363	99,575:	3,264	443,562
South Dakota.....	1,426	312,315:	1,707	435,275:	1,367	384,970:	97,555	22,450,291
Nebraska.....	531	105,449:	544	133,953:	333	80,913:	29,717	5,405,519
Wyoming.....	216	54,705:	316	88,755:	203	58,865:	5,913	1,253,808
Kansas.....	1,423	271,615:	1,106	249,335:	513	125,920:	41,181	6,699,879
Colorado.....	1,305	308,945:	908	244,300:	618	167,015:	21,276	3,135,527
Montana.....	524	117,890:	376	103,510:	355	111,025:	51,910	9,337,992
Total- 9 States:	9,232	\$1,972,284:	8,192	\$2,063,318:	6,087	\$1,668,868:	466,724	\$87,984,638

U. S. Department of Agriculture - Farm Credit Administration - Division of Finance and Accounts - Jan. 8, 1946

a/ Includes 1934-35 drought relief loans

Regional Agricultural Credit Corporation

Another type of credit for production purposes is available to meet the need for short-term agricultural credit in times when usual sources of credit are inadequate. In every economic depression, not only farmers with marginal credit standing but also many financially sound farmers have experienced a drying up of the usual sources of credit. Moreover, from time to time a special need for credit which usual sources are unable to supply arises in particular areas stricken by drought, floods, or other causes of distress to agricultural producers in the area.

During the recent war period, a need developed requiring large amounts of credit to insure extraordinary increases in production of certain food, feed and fiber crops for war purposes. A considerable portion of this credit was supplied by the Regional Agricultural Credit Corporation.

There are no limitations as to amounts that can be loaned to an individual borrower and the current interest rate is 5-1/2 per cent.

TABLE VI REGIONAL AGRICULTURAL CREDIT CORPORATION

Number and amount of loans made during the fiscal years 1943, 1944, and 1945 and the number and amount of loans outstanding on June 30, 1945, in selected States

States	Loans made during fiscal years						Loans outstanding	
	1943			1944			June 30, 1945	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Missouri.....	1	\$ 1,676,609		\$ 207,825	69	\$ 54,913	348	\$ 113,823
North Dakota.....		5,665,951		1,862,285	18		1,032	313,000
Iowa.....		1,738,763		235,389	60		186	101,281
South Dakota.....	Not	1,907,605	Not	359,265	39		402	171,424
Nebraska.....	avail-	2,921,290	avail-	980,630	162		384	245,714
Wyoming.....	able	609,938	able	767,691	45		102	241,605
Kansas.....		1,645,281		381,373	65		444	371,424
Colorado.....		966,930		732,172	131		273	417,348
Montana.....		2,622,799		950,698	10		155	213,506
Total- 9 States	-	\$19,755,166		\$6,477,328	599	\$1,564,378	3,326	\$2,189,125

U. S. Department of Agriculture - Farm Credit Administration - Division of Finance and Accounts - Jan. 8, 1946

Farm Security Administration

The functions of the Farm Security Administration in the development of the Missouri River Basin will begin with the delineation of inundation in any reservoir site. The Farm Security Administration has, within its experience, encountered most contingencies of the type now foreseeable in the readjustment of farm families in the development of the Basin. These adjustments will be incident to the movement of farmers from inundated areas to new locations and movement of dry land farmers into irrigated areas; establishment of new enterprises for young farmers, returning veterans and war workers; the creation of new farms by subdivision; the development of irrigation outside the Federal Reclamation projects; the development of roads and markets, schools, churches and many other facilities. Much of this adjustment must be accomplished through assistance given the families on an individual contact basis.

Relocation of farm families from inundated areas requires three major steps:

1. Surveying the families to discover their desires for their futures.
2. Discovering new farms for those wishing to continue in agriculture.
3. Fitting of these agricultural families into suitable communities with thought to the desires for adaptation to future irrigation when it is available.

If it is possible to contact families prior to appraisals by the land purchasing agency, difficulties will be greatly lessened because the families will know that their future is being considered and that possibilities for relocation including necessary financing have been looked into.

At the time of dislocation some of these families will need financing and will have no other source of credit than that provided by Farm Security Administration. This credit can be supplied either for land purchase or for chattels needed for a reorganized economy for the family.

As the development of any project reaches the point where water is available to the land, the credit and related facilities of Farm Security Administration will be needed by large numbers of families either readjusting from dry to irrigated operation or settling within the area.

Because of the development, a large number of additional units will be available for the settlement of farm families. An opportunity will be provided for young farm families, returned war workers, and veterans to establish themselves on family-type farms. In the readjustment of farm families to fit a changed agricultural and social economy, many farm families should be given the opportunity to purchase a family-type farm. It is assumed that many of these families will be eligible for assistance in acquiring farms under the provisions of the Bankhead-Jones Farm Tenant Act.

The present Farm Security organization consists of a county office in each county with farm and home supervisors trained in various phases of farm and home management, unit reorganization and the handling of other agricultural problems. Professional assistance is available for problems of farm engineering and land and building appraisal. Each county has the services of a County Committee, consisting of three local successful farmers who have intimate knowledge of local conditions. It is within the Committee's responsibility to make the determination of eligibility of applicants and to offer their judgment and guidance in matters pertaining to the welfare of the affected families.

Farm families wishing to operate as tenants with no other available source of credit may obtain Rural Rehabilitation loans from the Farm Security Administration. Advancing such loans involves:

1. The eligibility of the applicant family for a loan.
2. The approval of the farm to be occupied.
3. The analysis of the family and their economic, social and health needs.
4. The analysis of the farm, fertility of the soil and adaptability to diversified operation.
5. The development of a farm and home plan of operation, including budgeting income and expenses and keeping adequate records.
6. Making the loan.
7. On-the-farm supervision.
8. Providing committee service for debt rearrangement, tenure improvement and recommending improvements in farm businesses necessary for adjustments.

In the entire development it is estimated provision will be made for the settlement of an additional twenty-five thousand farm families not now living in the area. If the development of this area is to be successful, speculation must be avoided and the redistribution of the land controlled under appropriate policies. Farm Security Administration already has considerable experience in advancing tenant families to ownership through their Farm Ownership program. In making a farm ownership loan the Farm Security Administration approves loans to eligible farm families for the purpose of purchasing and improving family-type farms to be paid for over a period of forty years under a variable payment plan, at an interest rate of 3%. Under present authorities, loans are made to eligible farm families including World War veterans. Applicant farm families are carefully considered and selected as to eligibility and their likelihood of becoming rehabilitated and eventually retiring the indebtedness to the Government.

As under the Rural Rehabilitation program, farms are carefully selected and the type of farming and agricultural enterprise analyzed. The loan is approved on a basis of long-time earning capacity of the farm. To be successful, farm operators must not be overburdened with debt. Current and long-time farm and home plans are prepared. Arrangements are made for buildings and housing facilities to fit the family and their agricultural operation including necessary repairs to existing buildings, land and water development. Next is supervision on the farm with the family; budgeting of income and expenses and keeping of records; application on payment of debt under the variable payment plan.

Farm Security Administration has had considerable experience in the development and financing of cooperative local and terminal marketing facilities. The increase and changes in production due to the transition from dry land to irrigation farming will necessitate the development of new marketing facilities.

Encouragement is given to farm families to participate in sound annual pre-payment health associations; in cooperating and developing understanding with State medical and hospital associations for better and more adequate care; in developing arrangements with State institutions for the care of orthopedic and mental conditions where needed by low-income farm families. Loans are made to low-income families for health services and grants are made in some instances to destitute people. Special emphasis is placed on providing for health needs of borrower families, at the time of development of the loan.

With the inescapable increase in population concentration, due to irrigation reducing the size of farm and thereby increasing the numbers of farms (and therefore numbers of farm families), it will undoubtedly become incumbent upon the population to devise ways of increasing the numbers of doctors and hospitals and to themselves finance such increases. Farm Security Administration's cooperative health association participation loans will be well suited to meet these needs.

Participation loans are made to eligible families for group ownership of machinery and equipment. Irrigation farming necessitates the use of much rather high priced machinery for which no one family-type operator has sufficient use to justify ownership, yet the need

for such equipment is just as definite with the family-type operator as with the large commercial operator. The Farm Security Administration group ownership loan is well adapted for spreading the cost of such facilities so that family-type operators can afford the same advanced conveniences as commercial operators.

Loans are made to farmers for pump irrigation and domestic water facilities, such as correcting unsanitary wells and providing adequate water for livestock and human uses, in general, to make better use of land resources through proper use and application of water to the land and with the family.

While the exact nature and extent of the problems to be created is not known at this time, and can be determined only by detailed study and research, it is obvious that major emphasis will be placed on the selection and location of suitable family-type farms, land acquisition, tenure, adjustments in farming types, health, sanitation, water facilities, community development and rural housing. To deal with these problems the basic organization of the Farm Security Administration is available.

We have estimated that because of construction starting during the 1947 fiscal year, 2,000 farm families located back of the dams and subject to inundation will have to be contacted regarding relocation. We have estimated that one-half of these families will be tenants and the other half owners, and that approximately 30% of each class of operators will not continue in farming. Of the 1400 families who expect to remain in agriculture, there will be at least 250 who

will have so little equity in their chattels or land, or both, that they will be in need of grant assistance in order to be able to move and continue to operate. Such things as loss of gardens, the necessity of selling stock before it is ready for market, being forced to move at a time when it is impossible for them to preserve any feed, will all have a bearing on this need for grants. We feel that a minimum average for such grants will be \$300.

We have further estimated that 30% of the owners wishing to continue in agriculture, and 50% of the tenants who will continue farming, will be in need of Rural Rehabilitation loans if they are to find it possible to continue farming. Such things as moving expenses, replacement of feed, purchase of seed, replacement of worn out machinery or purchase of adapted machinery and replacement of livestock and machinery in which they hold a relatively small equity, will all combine to necessitate such loans. We have estimated a minimum average for these loans at \$1,000 per family.

Other operators needing Rural Rehabilitation assistance will be families presently living in the area to be irrigated in the future. It may be that their stock and equipment is in poor condition and credit has been used to the maximum, and without financial assistance they will be unable to modernize and keep their operating setup. For such type of loan we have estimated that there will be a number at least equal to families back of the dam needing our assistance, and that for such loans a minimum average would be \$1500.

Of the owners who will be dislocated, we have estimated that at least 30% will need some type of farm ownership assistance in relocating as owners. Some will have practically no equity in the land they sell and will be unable to secure adequate credit from other sources when purchasing a new farm. While such families will probably be able to make some down payment on their new farm, they will still be entirely dependent on credit if they are to continue in ownership. There will be others in this category who will own another small piece of land but will need the farm enlargement type of loan in order to give them a family-type unit in their new location. There will be other families having a small equity in raw land in another location. If these families are to develop their ownership they will need a farm development type loan, in order to put the necessary improvements on the new location. We have estimated that a minimum average for such type loans will be \$6,000.

For the 1948 fiscal year we have estimated that another nine dams will start construction, and have used the same average of 500 families back of each dam. On this total basis and using the same percentages as were used for the 1947 fiscal year, we believe there will be 560 families needing grants, 1800 families needing Rural Rehabilitation loans to assist them in relocation, another 1800 families needing Rural Rehabilitation assistance with a protective and readjustment type of loan, and 675 families needing some type of farm ownership loans.

For the 1949 fiscal year, we have estimated that the remaining eight dams will come under construction with the same 500 family average

behind each dam. On this basis there will be 500 families needing grants, 1600 families needing Rural Rehabilitation loans for relocation, another 1600 families needing Rural Rehabilitation assistance for protection and readjustment, and 600 families needing farm ownership loans.

We have made no estimates of further assistance needed when irrigation is available as we understand that no irrigation will be possible in less than six years from the time construction is started.

No better criterion of the need for large scale irrigation development in the Missouri River Basin can be found than in the fact that it has been necessary for the Farm Security Administration to assist over 200,000 farm families in the area with subsistence grants totaling \$60,000,000 to relieve crop and income failure. These grants were given in a majority of instances in the five-year period from 1936 to 1940. They were necessary because these people were unable to produce food for themselves and feed for their livestock, and because years of depressed prices preceding the drouth years combined with years of no production during the drouth years to leave them with no cash of their own to purchase even minimum necessities.

The amount of grant funds varied from \$600,000 for the portion of Iowa falling within the basin to over \$20,000,000 in the State of South Dakota. It is interesting to note that areas requiring the largest volume of grant funds largely fall within areas proposed as irrigation projects. Three counties within the area received over one million dollars in grants. An additional 22 counties received between

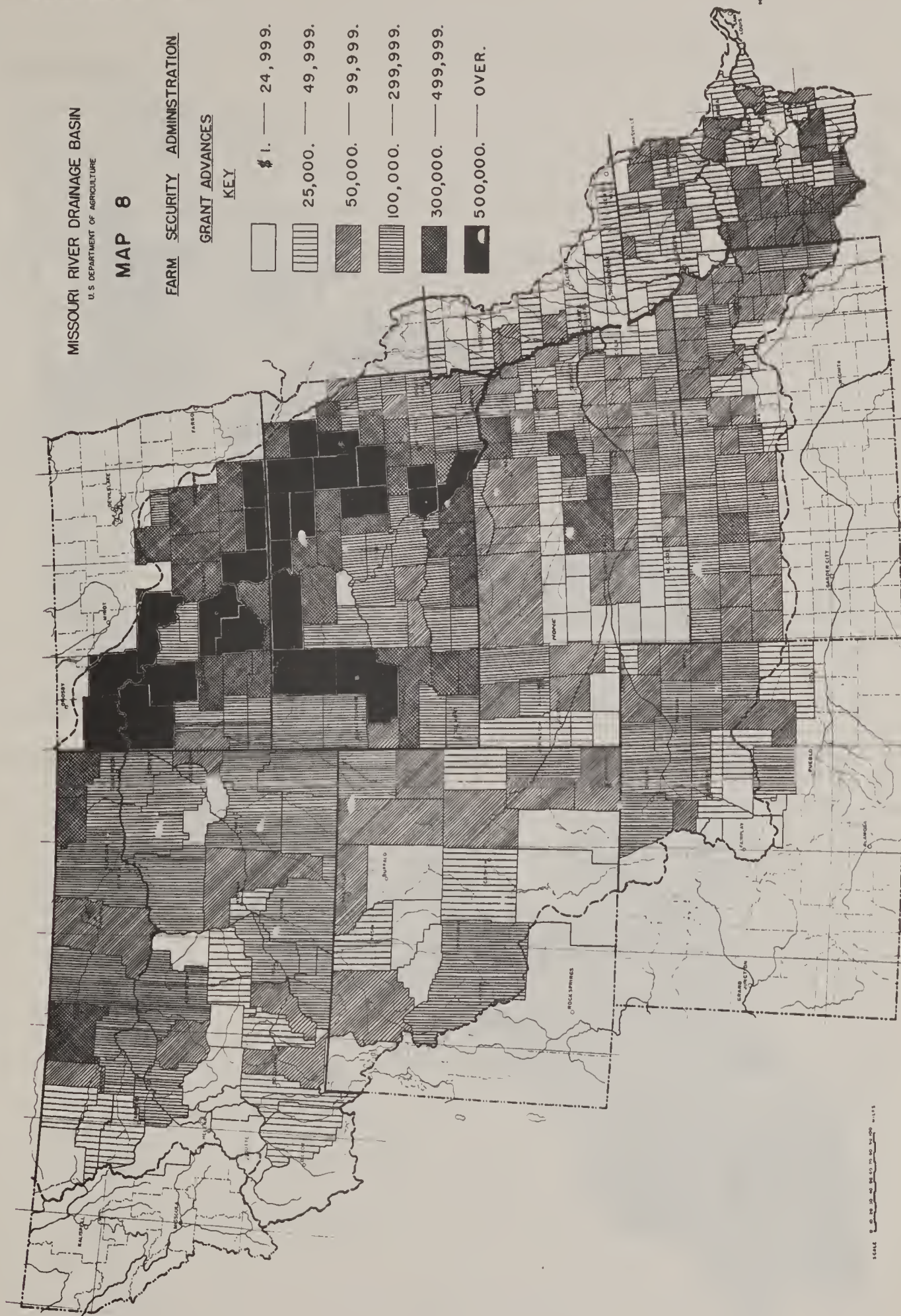
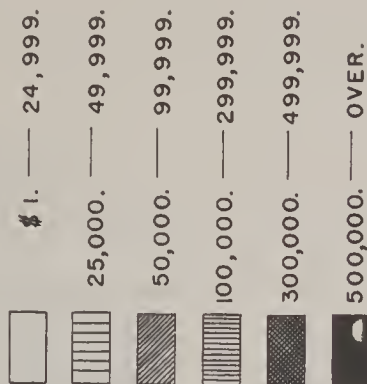
MISSOURI RIVER DRAINAGE BASIN
U. S. DEPARTMENT OF AGRICULTURE

MAP 8

FARM SECURITY ADMINISTRATION

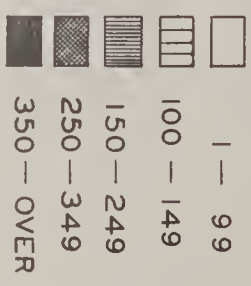
GRANT ADVANCES

KEY

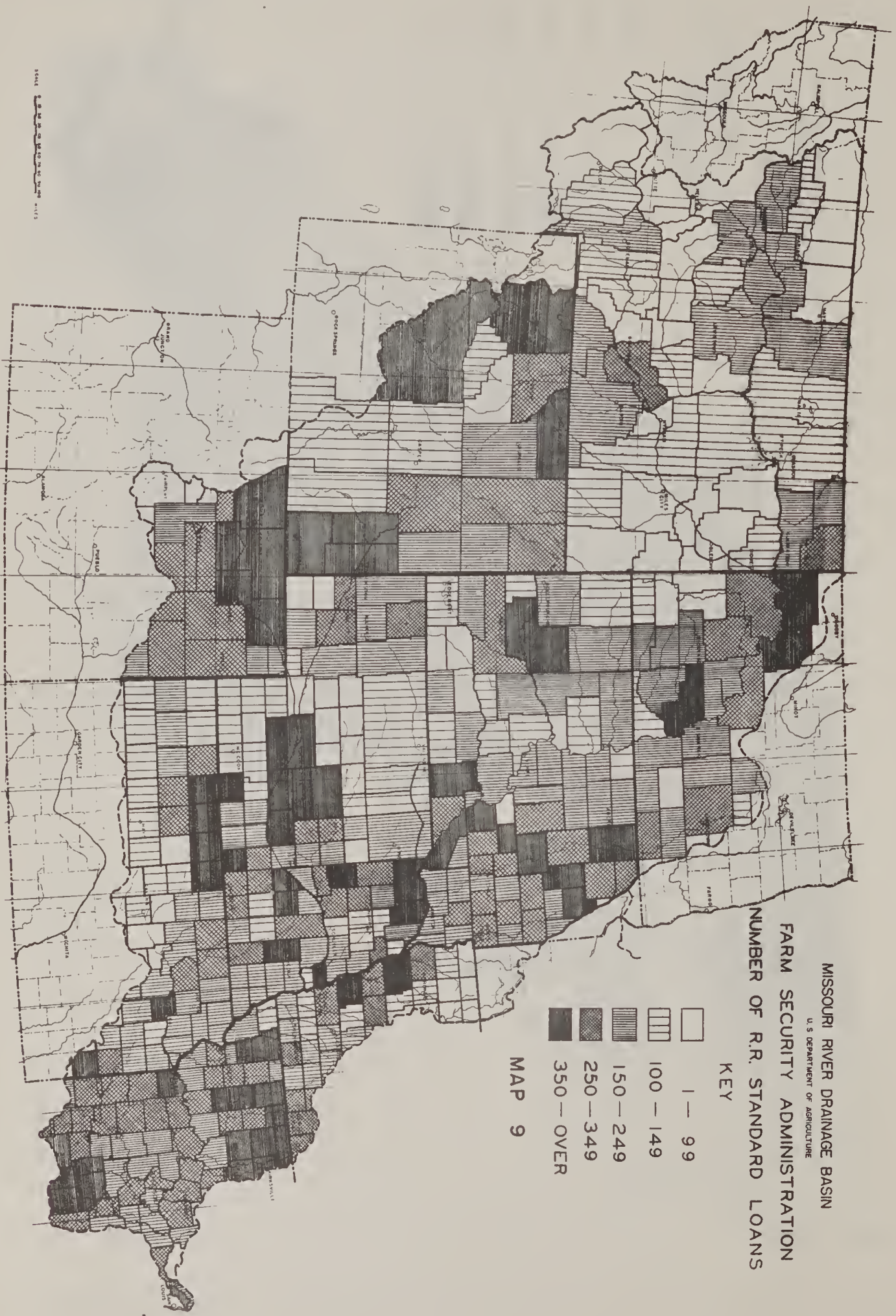


SCALE 0 20 40 60 80 100 MILES

MISSOURI RIVER DRAINAGE BASIN
 U. S. DEPARTMENT OF AGRICULTURE
 FARM SECURITY ADMINISTRATION
 NUMBER OF R.R. STANDARD LOANS



MAP 9



Scale 0 10 20 30 40 50 Miles

\$500,000 and \$1,000,000 and 34 more counties received between \$300,000 and \$500,000. (See Map 8)

The standard rural rehabilitation program has been of assistance to 95,000 more families. Standard rehabilitation loans provide the farm and home capital goods, operating funds for both farm and home, debt and tenure adjustment, assistance in planning and supervision in overcoming operating deficiency in farm, home, and money management needed by the family to become rehabilitated. These families operate under an annual farm and home management plan, made to fit the individual family and the farm. (See Map 9)

87,000 more families have received non-standard loans. These loans are of two types. The non-standard operating loan was made to families for crop production only during the fiscal years of 1937 and 1938. These families had sufficient capital goods, but were unable to secure operating credit from any other source - governmental or private. The loan was made as a stopgap to keep the family on the farm and was largely non-supervised. The second type of non-standard loan was made only for purchase of participation in various cooperative organizations.

These 182,000 families have borrowed a total of over 126 million dollars. 56% of the families have repaid their loans in full, and over 65% of all funds borrowed have been repaid.

The farm ownership program to provide opportunity for tenant farmers to become owners has been of assistance to 3600 families in the Basin. These 3600 families have borrowed nearly 26 million dollars. (See Map 10)

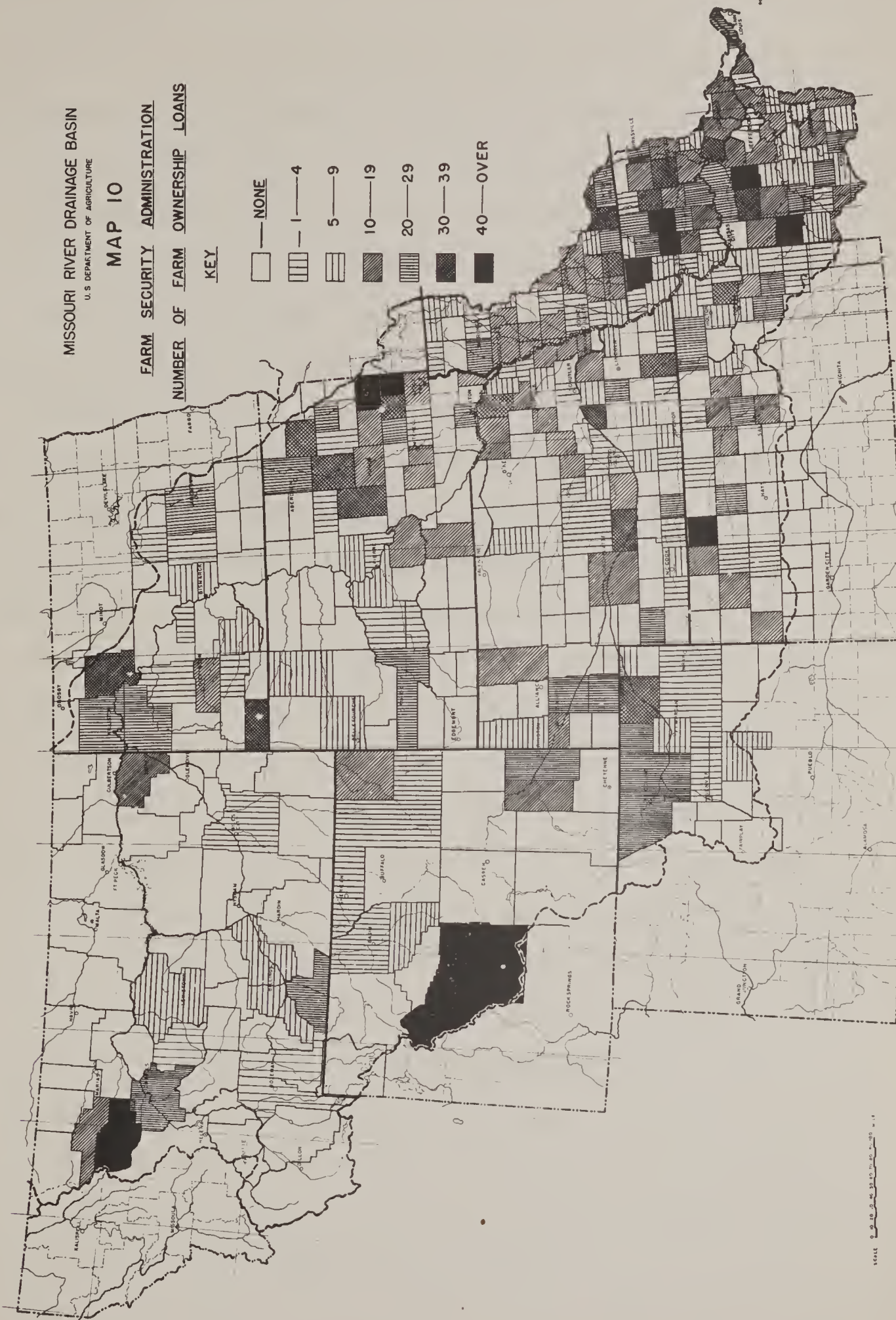
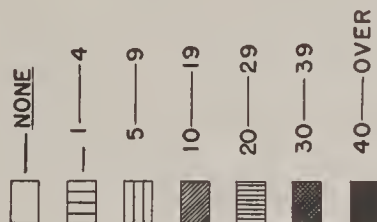
MISSOURI RIVER DRAINAGE BASIN
U.S. DEPARTMENT OF AGRICULTURE

MAP 10

FARM SECURITY ADMINISTRATION

NUMBER OF FARM OWNERSHIP LOANS

KEY



These are 100% loans for 40 years at 3% and provide for variable repayment allowing the purchaser to apply all of his net income in any year on his indebtedness. This program was inaugurated in the fiscal year 1938 and through the privilege of the variable payment principle and the above-average incomes of the war years, 13% of these families have retired their land debt. 90% of all such borrowers have paid in advance of a regular 40-year amortization schedule.

Altogether in the 10 years from July 1, 1935 to July 1, 1945 Farm Security Administration has been of assistance to 185,600 families in the Missouri River Basin through loans and has lent them 154 million dollars, and has given 60 million dollars in grants to an additional 200,000 families - a total of 214 million dollars and 385,600 families.

These funds, however, have not been the greatest assistance that the Administration has been to these families. The funds were necessary in implementing the family plan. The greatest assistance has been in the guidance and encouragement given by Farm Security Administration personnel on the farm and in the home to get these families again interested in solving their own problems and working themselves back to a debt-free status and in becoming stable members of their communities.

It is estimated that during 1946 Farm Security Administration will continue to supervise and service the presently active Basin caseload of 42,000 standard cases, 39,000 non-standard cases, and 3100 farm ownership cases. In addition, it is estimated that 6000 new standard loans requiring \$13,500,000 will be made and that 900 farm ownership cases requiring \$7,352,000 loan funds will be processed.

Production and Marketing Administration -- Field Service Branch

A. Legislative Authority and Objectives

To carry out the policy of Congress as set forth in the Soil Conservation and Domestic Allotment Act as amended and the Agricultural Adjustment Act of 1938 as amended by making assistance available to farmers to enable them to

1. Conserve and restore, in the national public interest, the Nation's farm and ranch resources through farming practices which maintain or increase soil fertility, control and prevent erosion caused by wind or water, conserve and result in better agricultural use of water to conserve and increase range and pasture forage.
2. Make the best use of farm and ranch resources by adjusting production of major agricultural commodities to meet all requirements and guarantee an adequate supply of food and fibre at prices that are fair to both producer and consumer.
3. Provide through farmer-elected committees a mechanism for planning and operating the program so that needed adjustments can be made quickly and with practical administration by placing responsibility and democratic opportunities for initiative and action to a great degree at the local county and State levels.
4. Improve farm income by providing facilities for promoting an orderly marketing of farm commodities by producers.
5. Raise the living level of farm families by aiding them to produce more and better food for farm home consumption.

B. The Agricultural Conservation Program (AAA)

1. Applicability -- The Agricultural Conservation Program is based on Sections 7 to 17 inclusive of the Soil Conservation and Domestic Allotment Act as amended and provides for making payments to farmers to assist them in carrying out soil and water conserving practices. Any producer (landlord, tenant or share-cropper) who participates in the operation of a farm is eligible to participate in the program.

The program is applicable to (1) privately owned lands; (2) lands owned by a State or political subdivision or agency thereof; (3) lands owned by corporations which are partly owned by the United States, such as Federal land banks and production credit associations; (4) lands temporarily owned by the United States or a corporation wholly owned by it, which were not acquired or reserved for conservation purposes including lands administered by the Farm Security Administration, the Reconstruction Finance Corporation, the Home Owners' Loan Corporation, or the Federal Farm Mortgage Corporation, or by any other Government agency designated by the Agricultural Adjustment Agency; (5) any cropland farmed by private persons which is owned by the United States or a corporation wholly owned by it; and (6) Indian lands except that where grazing operations are carried out on Indian lands administered by the Department of the Interior, such lands are within the scope of the program only if covered by a written agreement approved by the Department

of the Interior giving the operator an interest in the grazing and forage growing on the land and a right to occupy the land in order to carry out the grazing operations.

Assistance (in the form of program payments) is given to farmers for carrying out needed soil conserving practices which would not otherwise be carried out in desired volume. The payments cover only a part of the cost of the practices, the balance is borne by the producer himself.

2. Specific Applicability to Water Conservation on Irrigated Farms --

Section 8(b) of the Act contains specific authority for the making of payments or grants of other aid to producers in amounts "measured by (1) their treatment or use of their land, or a part thereof, for soil restoration, soil conservation, or the prevention of erosion; (2) changes in the use of their land; . . . "

In addition the following language is included: "In arid or semiarid sections (1) and (2) above shall be construed to cover water conservation and the beneficial use of water on individual farms, including measures to prevent run-off, the building of check dams and ponds, and providing facilities for applying water to the land."

The most important water conservation and use practices on the Agricultural Conservation Program for irrigated lands are

- a. Land leveling. This practice is restricted to lands for which water is available. The land must be put in condition for the growing of irrigated crops.

b. Reorganization of existing irrigation systems. This practice covers the reorganization of poorly planned and inefficient farm irrigation systems for the purpose of controlling erosion and to promote better use and conservation of water. There are many different improvements for which payments are offered -

- (1) Construction or enlargement of permanent ditches
- (2) Building small irrigation reservoirs
- (3) Land leveling
- (4) Lining ditches with concrete, bentonite, oil or asphalt-treated soils, impervious clay materials, or cloth to prevent seepage or loss of water
- (5) Installation of permanent irrigation structures such as siphons, flumes, drop boxes or chutes, outlet gates, check dams, weirs or drops to prevent erosion and conserve water. Repairs or replacements will not qualify for payment.

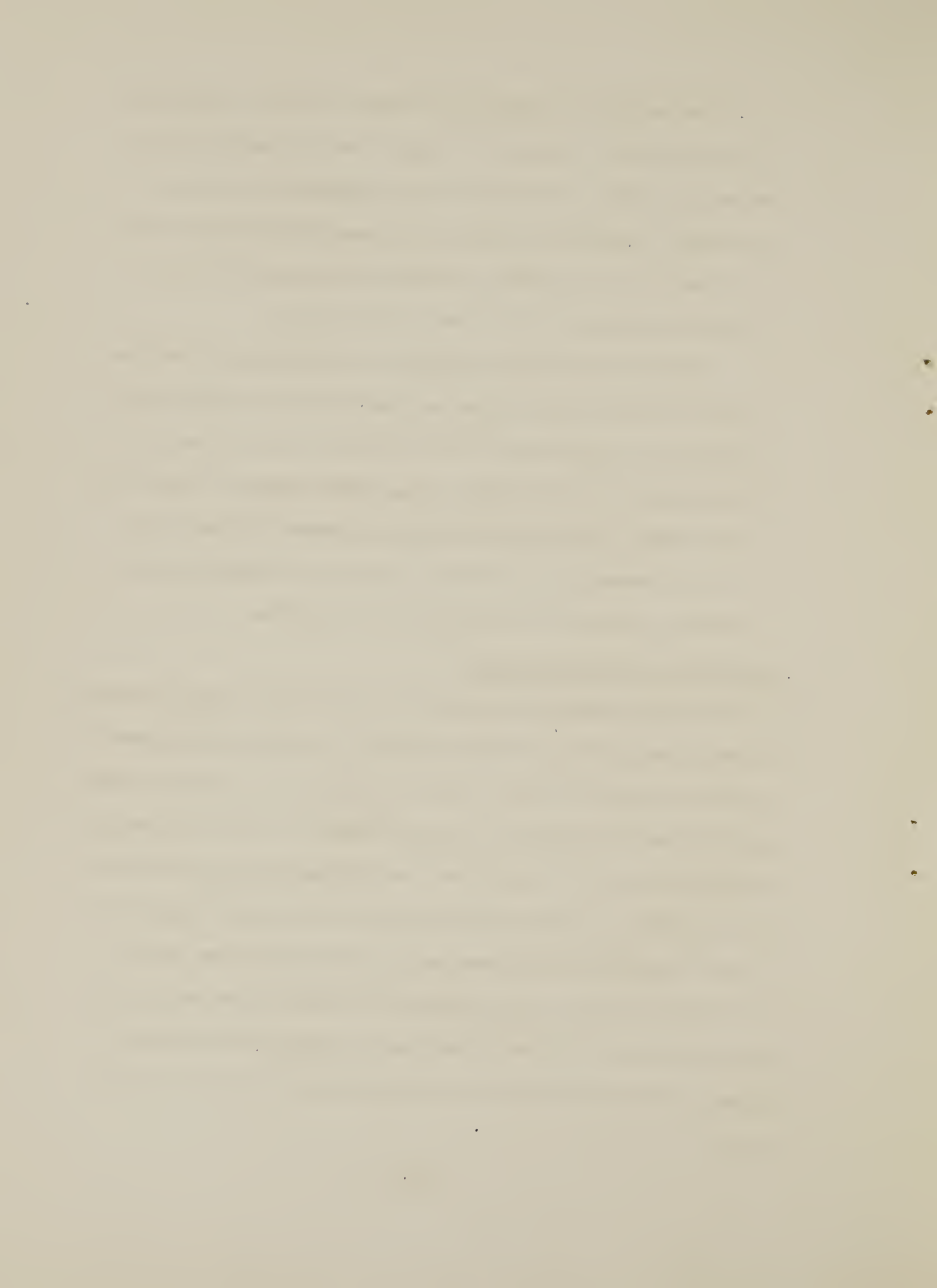
3. Other Program Practices Available -- There are many other practices for which payments are offered in the Agricultural Conservation Program which are applicable to irrigated lands. Included among these are the application of fertilizers and soil amendments, the establishment of permanent pastures, the plowing down of specified green manure crops, perennial noxious weed control, subsoiling and clearing land for tillage or pasture.

The program also includes practices for the conservation and use of water on range and pasturo lands to improve livestock distribution and obtain better utilization of forage resources. Payments are offered for building livestock dams and ponds, the development of springs and seeps and for installing additional water storage on the range.

Practices for erosion control and water spreading structures to control flood waters and run-off and to promote penetration of available water into the soil are also offered in the program. Erosion control dams, dikes, spreader dams, contour farming, terracing, protection of summer fallowed land, and the construction of drainage ditches are important practices for which program assistance is available.

C. Adjustments in Production (A.M.)

The farm program under the legislative authority in A above contains measures which may be used when necessary to achieve adjustments in line with production goals. These are (1) acreage allotments which synchronize with production goals and furnish a guide for planting the right acreage of the right crop and (2) marketing quotas which place a limit on the marketing of crops of which large supplies are on hand. Agricultural Conservation Program payments are used in some cases to encourage the production of needed crops and in other cases to encourage farmers to cut down on surplus crops and substitute other crops that may be less profitable but more urgently needed.



D. Other Programs

The Field Service Branch is responsible for the field administration of programs which

1. Support farm prices and farm income, such as
 - a. Commodity loans
 - b. Direct purchases of farm products
2. Make direct payments to producers, such as
 - a. Parity price adjustment payments
 - b. Production payments on the sale of dairy products, beef, and sheep and lambs
3. Assist in production, storage and marketing, such as
 - a. Sale and rental of grain storage bins
 - b. Sale and distribution of feed grains and proteins
4. Assist in alleviating surpluses, such as
 - a. The Ever-Normal Granary storage program
 - b. School lunch program
 - c. Direct distribution of surplus feed
5. Insure crops against unavoidable risks. In the Missouri Basin, crop insurance against most natural hazards of production which occur from the time of planting through harvest is offered on wheat and flax by the Federal Crop Insurance Corporation through county agricultural conservation committees (ACC). This insurance provides protection to producers of these two crops against financial loss resulting from complete or partial crop failure. Insurance on these two crops assists in stabilizing farm

incomes in the area, much of which is subject to severe climatic and other hazards.

The Federal Crop Insurance Corporation is also conducting within the area trial insurance programs on corn in several counties.

Forest Service

The future welfare and healthy economic development of the Missouri Basin's people and communities are intimately dependent upon the sustained and coordinated use of all natural resources. Forest Service basic policy is to help achieve, directly and through widespread co-operative effort, the efficient utilization of all the resources and services which forests and the associated wildlands are capable of providing under sound, continuous protection and management.

Specific job responsibilities are determined by the above policy, by the nature and productivity of the several interrelated forest land resources, and by the extent and importance of the public need for them. Timber for construction and other purposes, forage for livestock and big game, forest cover for non-timber values such as recreation, fish and small game have long been recognized as important elements of the regional resource pattern, particularly in the more mountainous western portion. Similarly, the values of forest growth in sheltering crops and homes against wind, in timber production and in soil stabilization are now well established in the Plains portion of the Basin.

Another equally and perhaps even more important responsibility, especially in the upper Basin, is that of safeguarding the extremely valuable sources of water supply. This water resource, already vital to the existence of irrigation agriculture and indeed of the total economy of the semiarid region, has now assumed such great public significance as to require an intensification of Forest Service objectives,

administrative practices and cooperative relations for the express purpose of assuring its maximum protection and usefulness.

All the services rendered by forests -- usable water, timber, forage, recreation, soil stabilization and protection against wind -- are now in demand to a rapidly increasing extent by all segments of the Basin's 7 million people. Fulfillment of the comprehensive developmental programs of the Bureau of Reclamation and other agencies will enhance the values of forest lands for all these purposes. At the same time, however, the strain upon the forest resources will become greater than ever before.

The job of the Forest Service involves both preventive and positive aspects. Overuse of any single forest resource must be prevented; utilization of the same areas for a combination of products or services must be tempered according to the physical characteristics of the land, relative needs for different services, and the effects of each upon the others. In some critical situations or where high values are involved, as in the case of water production, for example, the safeguarding of the public interests may necessitate permitting only one form of activity. Forest Service responsibility here is to see to it that the best possible balance is achieved among all needs. In this, local requirements will continue to be given due weight but without neglecting regional considerations.

In the upper or western portion of the Basin, containing a considerable area of national forest land (some 15 million acres), water resource management, a dominant objective, aims at making specific contributions to the local and regional water economy.

These include reduction of water losses from evaporation and, where feasible, from interception and transpiration; maintenance of forest soil stability and improvement of soil structure to increase natural storage of winter and summer precipitation; relation of erosion and sedimentation damage to downstream investments and communities; tempering of the extremes of high and low flow; and attainment of better seasonal distribution and quality of usable streamflow.

Water resource goals can be accomplished in large part through intensified fire control, improvement in or modification of timber, range, wildlife and recreational management practices, and by special precautions in the construction and maintenance of roads, trails, and other works.

One of the first prerequisites to sound management is the rehabilitation of slopes, stream banks and channels damaged as a result of fire, improper grazing, logging, or other factors. Careful maintenance, both of these areas and of lands already in good condition, is necessary to assure their maximum contribution to the protection of welfare of localities and the region itself. On national forest lands, such work has already been undertaken to good effect. In the case of privately owned lands, the Forest Service by technical and financial aid seeks to expand and improve fire control and to encourage better cutting and grazing practices. In some situations, however, additional acquisition of seriously eroded or otherwise deteriorated private lands will be necessary in order to restore productivity and protect high watershed values in the public interest.

The eastern and more humid portion of the Missouri Basin presents an entirely different set of conditions and problems. Here farm lands and other small private holdings predominate. Forests are scattered except in the extreme southeast portion. Flood and erosion damage is relatively of much greater concern to the farms, urban settlements and public facilities than in the western portion. Water is not as critical a factor here, but serious shortages do exist, particularly in respect to underground supplies, and surface waters are impaired by siltation and unstable channels.

Within the Plains portion the job of the Forest Service is primarily one of cooperating with the States and private land owners in bringing about reduction of needless damage to forest and woodlands by fire and overgrazing, in stimulating planting and the adoption of less wasteful cutting and logging practices, and particularly in increasing the income from timber crops. Supplementing this cooperative effort is a national forest acquisition program in the more densely wooded areas, as in Missouri, the restoration of badly deteriorated submarginal hill lands requires investments and a deformation of income too great to be borne economically by individual owners, even with substantial Federal subsidies.

In summary, the program of the Forest Service is definitely designed to facilitate the unified physical and economic development of the Missouri Basin as a whole. In common with other public land and water conservation agencies, Forest Service watershed activities are helping to provide better soil control, more satisfactory streamflow

conditions, and higher and more usable water yields. The same measures applied to accomplish these purposes will also be effective in assuring the greater permanency of irrigation and other water regulation or control works, and in raising the productivity and income of forests and woodlands throughout the territory of the Missouri Basin.

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